SCAT
SCIENTIFIC COMPUTING ADVANCED TRAINING

First Interim Report – ALFA Project on Scientific Computing Advanced Training

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Preface

The developed world has been effectively using science and technology to drive economic progress for more than 200 years. But today, about 150 countries, mostly in the Southern Hemisphere, remain at lower levels of economic development and of personal health and wealth of their populations.

It has been recognized that developing countries need to build scientific capacity to use science and technology as an engine of economic development[1]. However, scientists in the developing world face many difficult challenges in education, resources, autonomy, access to equipment and scientific literature, and lack of role models for the young.

The European Union has consistently increased its involvement in support of scientific activity in developing countries. One predominant approach of these programs is the encouragement of international cooperation. Within this framework lies the ALFA Programme[2], for cooperation between higher education institutions in Europe and Latin America.

ALFA — América Latina, Formación Académica — is a programme for the advancement of academic cooperation between the European Union and Latin America.

A project co-funded by EuropeAid

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[1] See, for example, "Building Scientific Capacity", a report of the Third World Academy of Sciences, 2004

[2] http://ec.europa.eu/europeaid/projects/alfa/

Executive Summary

The Scientific Computing Advanced Training (SCAT) project is a collaboration project among ten (10) institutions of higher learning and research, in six (6) countries of Latin America and Europe. The main actions of the project consist of a programme of mobility grants, aimed at under- or post-graduate students or postdoctoral fellows, and a programme of international scientific meetings and courses.

In the first 14 months of activities, the SCAT project has held three rounds of selection for the mobility grants, with eight grants awarded. Four international meetings have been held, and one summer school, all of which have increasingly attracted attention beyond the network partners. The project has a professional and informative web site, and has achieved prominence with a number of press appearances and articles dedicated to it.

Some actions have started later than anticipated, in particular the mobility grants programme. For this reason, the first Interim Report covers 14 months rather than a year, and thus the financial statement reaches the 70% expenditure of the pre-financing that the contracting authority requires.

The expenditures have been checked and audited against the supporting documents and the contract. The declared spending of the first period, amounting €227,126.96 has been duly justified, and approved by the corresponding audit.

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Contents

Section 1

Introduction

The SCAT (Scientific Computing Advanced Training) project is a collaboration project involving 10 institutions in Europe and Latin America, co-financed by the ALFA Programme of EuropeAid.

The overall objectives of the project, as detailed in the project proposal (submitted for the 10th round of ALFA in October 2004), are the following:

- Consolidate a partnership of institutions of higher education and research that provokes accelerated knowledge transfer in scientific computing technology and applications in science and engineering.

- Provide hands-on training to advanced students and post-doctoral researchers in the methods and applications of advanced computational research.

- Bring together research groups in the network partners, to develop a synergy and a common vision in the use of scientific computing in balance with analysis and experiments, for the production of high-quality research.

- Trigger initiatives for furthering advanced computational research in Latin American institutions of higher-education, and promote future student exchanges with Europe.

The partners in the SCAT project are the following institutions of higher learning and research:

1. University of Bristol, United Kingdom (coordinating institution) —including members in the Department of Mathematics, the Information Services Department, and the Department of Aerospace Engineering.

2. Computational Engineering Group, Daresbury Laboratory, U.K.

3. Institut de Recherche sur Phénomènes Hors Equilibre, Marseille, France.

4. Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

5. École Supérieure de Physique et de Chimie Industrielles, Paris, France

6. Universitat Politécnica de Catalunya, Barcelona, Spain — Heat and Mass Transfer Technological Centre.

7. Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil.

8. Universidad Técnica Federico Santa María, Valparaíso, Chile —Department of Mathematics, Department of Computer Science (*Informática*), and Department of Mechanical Engineering.

9. University of Chile, Santiago, Chile —Dept. of Physics.

10. Universidad Nacional Autónoma de Méxi-co, Mexico City —Instituto de Investigación en Matemáticas Aplicadas y Sistemas, Instituto de Geofísica, and Facultad de Estudios Superiores Cuautitlán.

This Interim Report #1 covers a period of the first 14 months of the project. The project start date is 25 November 2005, and this report covers the period from that date until end of January 2007.

The need to include two additional months in the Financial Interim Report arise from the requirement of the contracting authority of achieving a level of expenditure of 70% of the European Commission contribution to the pre-financing, before a new payment request and audit report is sent.

The 70% expenditure threshold was only achieved after the First Latin American SCAT Workshop and Summer School, in Valparaíso (Jan. '07). The reason for a delay in expenditures compared to those anticipated at the proposal stage is the fact that the mobility grants programme started four months later than the original plan. More details are provided in the section §2 on Mobility Grants.

At this time, the declared spending of the period of this Interim Report is €227,126.96, which surpasses the threshold of 70% of the pre-financing, as required. The expenditures have been checked and audited, and the Audit Certificate is enclosed, together with the request for further pre-financing.

The rest of this report is organized as follows. Section §2 details the Grant Holder Mobility programme during this first period of activity. Three rounds of selection have been carried out, and eight (8) grants have been awarded during this time. The first mobilities commenced in October 2006, which is month 11 of the project. Details of each selection round are given in §2, as well as the identification of grant holders. Supporting documents for this section, including all the procedures for the grants programme and minutes of the selection rounds, are included in Appendix A.

The next section, §3, details the programme of international scientific meetings up to this point. Four meetings have been carried out, one of which followed up with a summer school in

Chile. Overall, meetings have been well attended, and very successful, and they have increasingly attracted attention beyond the SCAT network. Documentation pertaining to the meetings, including full programmes for each event, are included in Appendix B.

We follow up with a discussion of the Dissemination activities of the project, in Section §4. Since the mobility grants have only started recently, there are not a huge amount of results to report in terms of scientific dissemination. However, we have had great success with popular dissemination of the project, with several appearances in the press and in some university publications for alumni, employees, industrial partners and beyond. There is a wealth of evidence of press appearances, which is included in Appendix C.

The SCAT project has complementary goals to the training programme which involve the experimentation with distance collaboration technology. We aim to promote the use of software and network tools to link geographically separated scientists. This aspect of our efforts is intended to facilitate the joint supervision of grant holders, as well as the new scientific collaborations that arise among the network partners. The progress made in this area is reported in Section §5, and some supporting material is presented in Appendix D.

Finally, in §6, we address the modifications brought to the initial project and their justification. First, several minor modifications are recalled; minor modifications are those that in no way affect the basic purpose of each of the Actions contemplated in the project, and furthermore do not exceed the budgetary threshold of 15% of the corresponding budget heading. Abiding to the regulations of the ALFA Programme, each and every one of these minor modifications was communicated in writing to the ALFA office in a timely manner. And second, this section presents a proposed contract modification, in which the project should be from now on subject to joint-coordination. The financial and legal responsibilities remain with the coordinating institution, but we propose joint-coordination for the organization of meetings and support for mobility of grant holders. Estimates of the personnel cost are provided, justified by time sheets kept by the network partners in the period of this interim report.

The final Appendix includes several supporting documents, which are provided in hard copy but not in the electronic version (PDF) of this document. The CVs of grant holders are included here —they are not included in the electronic copy for consideration of the privacy of the grant holders (as the electronic document will be available on the project web site). Other documents pertaining to the budget and justifying the modifications proposed in §6 are also added here.

Note The links in blue are active links that in the electronic version of the document will attempt a connection to the internet, opening a web page or a draft email. The links in the SCAT purple color are internal links of the document, which in the PDF jump to a section or subsection.

Section 2

Grant Holder Mobility

Summary In the period of this interim Report, three grant-holder selection rounds have been carried out, and eight (8) grantees were selected. Out of these, four have started their mobility, one has declined the grant, and three are in the stages of preparation for mobility. Eight network partners have been involved in these mobilities, either as home or host institution.

2.1 Selection Rounds

Three selection rounds have been held:

1. Deadline: 15 June 2006 — selection was carried out during the second SCAT meeting, at Daresbury, U.K. (this meeting is identified as the First European Scientific Workshop; see §3-International Meetings and Courses).

2. Deadline: 15 September 2006 — selection carried out during the third SCAT meeting, in Paris (meeting is identified as the Second European Scientific Workshop; see §3).

3. Deadline: 15 December 2006 — selection carried out during the fourth SCAT meeting, in Valparaiso, Chile (meeting identified as the First Latin American Scientific Workshop and Summer School; see §3).

Recall that the start date of the project is 25 November 2005. Selection of grant-holders was not held earlier than June 2006 for several reasons. First, there was need for disseminating among the network partners the various research interests of the participating groups, to identify common areas; this was done at the launch meeting, in Barcelona, February 2006. Second, there was need for appropriate dissemination of the mobility grants programme. This was accomplished with posters being sent to all the network partners (see a sample in Appendix A), and with the website going live, which happened on April 2006 (see §4-Dissemination). Further to the posters and website, there is of course the first-hand dissemination of the grants by the supervisors to their students; finally, there were several press appearances at the launch of the project which may have helped dissemination among potential applicants (see §4).

Goals
The project proposal contemplated five (5) mobility grants to be awarded in the first year, to commence in month seven. A further number of mobilities were programmed to start at the beginning of Year 2.

The first grantees commenced their mobility in October 2006, which is month 11 of the project. Therefore, the mobilities started 4 months later than it was anticipated. The reason for this delay is that the amount of preparation required for the grants programme was underestimated.

Moreover, only three grantees commenced their mobility after the first round of selection. One additional selected grantee declined; his reasons were a better position being offered to him as a postdoctoral scholar at Warwick University. The reason for the small number of grants awarded is that the selection was subject to strict requirements, and that the number of applications received was limited.

2.2   Application Process

The process for the applications of grant holders is described in detail in the document "Guideline for Applicants", attached in Appendix A of this report. This document was made immediately available on the project website, when the site went live in the beginning of April 2006. This date therefore represents the opening of the applications process.

In summary, the application requirements are the following:

1. Grants are intended for graduate students (MSc or PhD) or postdoctoral fellows registered at, affiliated to, or graduated from one of the network partner institutions.

2. Applicants must have at least a Bachelor of Science or equivalent degree, and a strong mathematical background.

3. Applicants must have proven English language skills, for example, by standard tests such as TOEFL, IELTS, or Melab.

4. Computer skills are required, and previous research experience desirable.

All applications are received via an online form, available on the project website. This facilitates the process for the applicant, and in addition leaves a complete electronic record of all applications received. We have included a screen shot of the online application form in Appendix A.

2.3   Selection of Grant Holders

The selection of grant holders has in each of the three rounds been held at one of the project's international meetings, as described in §2.1. For the selection session, all SCAT members present at the meeting are invited to participate. A chairman of the session is selected among the members of the Scholarship Team. The chairmen have been:

1. Daresbury (30 June 2006) — Prof. Luis Salinas

2. Paris (26 September 2006) — Dr. Andre Nachbin

Difficulties
Preparations for the grant programme were more demanding than it was anticipated, and the high level sought for applicants implied few applications were received. At this level, we also compete with other opportunities available to candidates, such as doctoral or postdoctoral positions. The problem is the short duration of the grant, in comparison with other postdoctoral fellowships.

3. Valparaiso (6 January 2006) — Prof. Luis Salinas

We have included copies of the Minutes produced after each selection process, detailing the proceedings, in Appendix A.

Before a selection session, the coordination office prepares a dossier for each applicant, with all their documents received with the application. Furthermore, we have developed a Check List, which is added to each dossier, pre-screening applications for eligibility, satisfaction of prerequisites, and supporting documents. See the Check List in Appendix A.

During the selection process, the dossier of each applicant is presented by either the supervisor of the applicant in the home institution, or the potential supervisor at the host institution. The first is preferred, because he can relate first-hand on the special characteristics of the applicant. The second is possible because it is expected that, to suggest a host institution, the applicant should have been in correspondence with the potential supervisor ahead of the application. This way, a research project can be determined for the mobility. Thus, the host supervisor may have formed some opinion on the suitability of the applicant. If none of these presenters are attending the meeting, the next option is for the dossier to be presented by any other meeting attendee from the home institution.

After (and during) presentation of each applicant, the dossiers are circulated. An open discussion is held about each applicant, and a decision is reached by consensus of all SCAT members in attendance to either accept or reject the application.

It is worth noting one exception to the above procedure. The applicant Dr. Thomas Séon was subject to a fast-track procedure, which was agreed due to the difficulty of finding European applicants who wish to carry out a mobility in Latin America. The applicant Dr. Séon (recently graduated) was present at the SCAT meeting in Paris, and there he met with some project members and expressed his interest in a mobility to Chile. His PhD supervisors were present and recommended him greatly. He was allowed to submit an application (using the procedure via the online form) after deadline, which was promptly processed by the Scholarship Team. The fast-track procedure for Dr. Séon is detailed in the corresponding Minutes, included in Appendix A.

Success
It is generally difficult to identify potential European grantees wishing to do a mobility in Latin America. Recruiting a post-doctoral scholar who will spend an extended period of time in Chile in a SCAT mobility grant is quite an achievement. The relationships between the scientists involved are bound to survive much beyond the duration of the project.

2.4   Preparations for Mobility

The SCAT coordination office developed a guidance note for the initiation of the mobility of grant holders, which is circulated to home and host institutions. This note is titled "General Recommendations regarding the Registration of Grant Holders", and is included in Appendix A. The purpose of this document is to remind supervisors of the steps that are needed to commence the mobility, so that adequate support can be given to the grantee. These steps include sending an acceptance letter for the processing of a Student Visa, the need of purchasing appropriate insurance before travel, and the resources that need to be in place at the host institution to receive the grant-holder.

Moreover, grantees are asked to read and sign a document entitled "Responsibilities of Grant Holders" before their travel. This document reminds them that they have made a commitment to complete the mobility, that they are responsible for their travel arrangements, insurance and Visa, and that they must acknowledge SCAT in any publications, among other things. The Responsibilities document is included in Appendix A.

2.5 Identification of Grantees

Following, is a roster of all the candidates awarded a mobility grant during the period of this interim Report. The details of their applications, and a report of each selection process, can be found in the Minutes of each selection round included in Appendix A. The CVs of grantees are included in the Appendix E: Additional Documentation.

Name of the grantee *Helmut Wahanik*

Institution of origin Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil.

Host institution University of Bristol

Kind of training and duration Advanced Training (AT), at MSc level, 6 months

Beginning of the training period October 2006

Area of study Computational science; implementation of a Fourier spectral method using Matlab for computation of vortex flows.

Name of the grantee *Felipe Cruz*

Institution of origin Universidad Técnica Federico Santa María, Valparaíso, Chile.

Host institution University of Bristol

Kind of training and duration AT, MSc level, 8 months

Beginning of the training period October 2006

Area of study Computational science; development and implementation of an algorithm for fast particle interactions in meshless vortex methods.

Name of the grantee *Dr Miguel Bustamante*

Institution of origin Departament of Physics, University of Chile, Santiago, Chile.

Host institution Institut de Recherche sur Phénomènes Hors Equilibre, Marseille, France.

Success
Helmut is the first grantee to finish his mobility, and will commence PhD study at IMPA in March 2007. His experience is described in the preface to his mobility report, reproduced here in Appendix A.

Success
After four months in place for the mobility, Felipe Cruz has been motivated to apply for PhD study at Bristol, and continue his academic career. He has been offered a place, and awaits response on funding for an overseas research scholarship.

Kind of training and duration AT (postdoctoral), 8 months

Beginning of the training period Declined

Area of study Not applicable.

Name of the grantee *Leonardo Gordillo*

Institution of origin Departament of Physics, University of Chile, Santiago, Chile.

Host institution Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

Kind of training and duration AT, MSc level, 8 months

Beginning of the training period October 2006

Area of study Computational science; simulation of interfacial flows with moving contact lines.

Name of the grantee *Dr Thomas Séon*

Institution of origin Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

Host institution Departament of Physics, University of Chile, Santiago, Chile.

Kind of training and duration AT (postdoctoral), 8 months

Beginning of the training period December 2006

Area of study Acoustic characterization of materials, experimental and numerical study.

Name of the grantee *Ana Lilia González*

Institution of origin Universidad Nacional Autónoma de México, Mexico City.

Host institutions Computational Engineering Group, Daresbury Laboratory, U.K.

Kind of training and duration AT, MSc level, 8 months

Beginning of the training period Delayed due to health reasons. Scheduled for January 2008.

Area of study Computational engineering; parallel algorithm for fluid flow simulations.

Name of the grantee *Claudio Torres*

Institution of origin Universidad Técnica Federico Santa María, Valparaiso, Chile.

Host institution University of Bristol

Kind of training and duration AT, MSc level, 8 months

Beginning of the training period March 2007

Area of study Computational science; modelling and simulation of vortex flows.

Name of the grantee *Dr Luis de la Cruz*

Institution of origin Universidad Nacional Autónoma de México, Mexico City.

Host institution Computational Engineering Group, Daresbury Laboratory, U.K.

Kind of training and duration AT, post-doctoral, 8 months

Beginning of the training period August 2007

Area of study Computational science; meshless methods for microfluidics using an object-oriented approach.

Name of the grantee *Guillermo Oyarzún*

Institution of origin Universidad Técnica Federico Santa María, Valparaiso, Chile.

Host institution Universitat Politécnica de Catalunya, Barcelona, Spain

Kind of training and duration AT, MSc level, 8 months

Beginning of the training period To be confirmed.

Area of study Computational engineering; direct numerical simulation of natural convection flows.

2.6   Training Programme & Conditions

2.6.1   Research Training

As the mobility grants of the SCAT project are at the postgraduate level, and meant to provide hands-on research experience in computational science, the training programme consists on personally supervised independent research. The tutors at the host institution collaborate with the SCAT grantee as they would with a PhD student or a regular post-doctoral fellow (depending on the level of the grantee). Each applicant has corresponded with their potential host supervisor and determined a research topic before submitting an application. Once in place for the mobility, the research topic may be adapted to the needs of training of the grantee, at the discretion of the host supervisor.

2.6.2   Language Improvement

Language improvement courses have been offered to all grant-ees as a possibility. English is the official language of the project, and it is required at the application stage that applicants have a level of proficiency in the English language which is comparable to the usual requirements of postgraduate admissions to universities in English-speaking countries. Nevertheless, in many cases there is still much to be gained from improving the language skills of the grantee.

In general, the support for language improvement has proved to be of much interest to the grant holders. For them, being highly proficient in the English language enhances their career prospects as scientists.

In some cases, there is also a need for the grant holder to improve his or her skills in the local language of the country of the mobility. This has proven to be the case, in particular, of our only European grant holder, Dr. Thomas Séon, who has commenced a mobility in Chile without any prior knowledge of Spanish. For him, it was determined necessary to commence with a course of private lessons in Spanish as soon as he started his mobility. He received an intensive programme of 80 hours of private tuition. After this, he is considering the suitability of the University of Chile Programme of Spanish for Foreign Students, which is a one-semester intensive course organized by the Linguistics Department.

In the case of the two grant-holders who have travelled to Bristol, they are attending a course free of charge for the SCAT project, titled English for Academic Purposes. The University of Bristol has offered the students this course as an added bonus of their research visit, for which the SCAT coordination team is especially grateful.

2.6.3   Health Cover and Insurance

It is recognised that grant holders are entitled to have full health insurance during their mobility. Two kinds of insurance are offered: travel insurance, which is usually included in their travel costs, and health insurance during their stay abroad. In the latter case, we are faced with the fact that health coverage differs from one host country to another. The following cases have been raised.

Mobilities in the EU The health systems in France, Spain and the UK provide a diverse range of coverage, subject to various circumstances. Above those minimum standards, and considering the transitory situation in which students are put during their mobility, SCAT advises grantees to take complementary health insurance. This would cover any emergency during their stay.

Mobilities in LA In Latin America, private health cover is advised, in general. Therefore, European grantees are counselled to buy full insurance at their home country before starting their mobility.

The cost of additional health insurance contracts is assigned to the budget line "Preparations for mobility", according to the ALFA Programme Guidelines.

2.6.4   Certificate of Completion

SCAT grantees are awarded a Certificate of Completion once they finish their mobility period. For a sample, see Appendix A.

2.6.5   Grantee Testimonial

We would like to finish this section on Grant Holder Mobility with a Testimonial recently sent to us by grantee Leonardo Gordillo, who is in Paris since October 2006.

> I have already spent five months in Paris and I feel that I have learned Physics, Mathematics and computational tools applied to fluid dynamics as ever. I [attended] several courses sponsored by the university where I have been in contact with the actual research topics in the area: instabilities, interfaces, suspensions, control flow, vortex hydrodynamics, etc. I have also learned about numerical methods for integrating fluid mechanics equations: finite differences, finite elements and finite volume discretizations; algorithms for multiphase fluids: the volume of fluid method, etc.

> I have been working in three projects: the first one was a very simple project, using a code to simulate the flow past a cylinder; just to get familiarized with numerical simulations. The second one consists in calculating the relation between physical parameters and the size of the neck in a two dimensional viscous sheet retracted by the surface tension at its tip. This is made with *Gerris*, an open source code with which the LMM has been collaborating. The final project is more theoretical and consists in describing the evolution of the crown shape arising from the impact of a drop in a wetted wall. We expect to corroborate this with other numerical simulations performed as well by the LMM.

> All these projects and courses give me a lot of experience and are very useful for me because they get me used to work in actual research areas using new technologies. I have also been able to begin contacts with very important people in the field from here and this means for me a very good opportunity to start other projects in the future.

> Leonardo Gordillo–Paris, March 6th 2007

The crown of a milk drop.

Section 3

International Meetings and Courses

Project launch in Barcelona

Summary   In the first year of the project, all three meetings that were planned were carried out, and were well attended.   One additional meeting has been held, corresponding to the second project-year, and including a summer school in computational science and engineering.   Meetings have increasingly attracted participation beyond the network.

3.1   SCAT Project Launch Meeting

The SCAT project was launched in Barcelona, at the campus of Universitat Politécnica de Catalunya, in February 2006. On this occasion, representatives from the 10 partner institutions made scientific presentations describing their research programmes. In addition, they discussed the project actions, and organized the first round of mobility grants. The meeting was highlighted by an official visit to Barcelona Supercomputing Centre, housing the fastest computer in Europe and 8th in the world, *MareNostrum* (according to November 2005 top500 listing).

Following is the list of international participants in the first SCAT meeting, the project launch in Barcelona:

- Dr. Lorena Barba, Department of Mathematics, University of Bristol, United Kingdom

- Dr. Ian Stewart, Department of Information Services, University of Bristol, United Kingdom

- Mr. Boris Drappier, SCAT Project Manager, University of Bristol, United Kingdom

- Dr. David Emerson, Computational Science and Engineering Department, Daresbury Laboratory, United Kingdom

- Dr. Mike Ashworth, Computational Science and Engineering Department, Daresbury Laboratory, United Kingdom

- Dr. Agnès Maurel, École Supérieure de Physique et de Chimie Industrielles, Paris, France

Goals

The project contemplated three (3) international meetings per project year, which is the maximum according to the ALFA Programme guidelines.

- Dr. Jose Eduardo Wesfreid, École Supérieure de Physique et de Chimie Industrielles, Paris, France

- Dr. Christophe Josserand, Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

- Dr. Joël Frelat, Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

- Prof. Oscar Orellana, Department of Mathematics, Universidad Técnica Federico Santa María, Valparaíso, Chile

- Prof. Luis Salinas, Department of Mathematics, Universidad Técnica Federico Santa María, Valparaíso, Chile

- Dr. Alberto Verga, Institut de Recherche sur les Phénomènes Hors Equilibre, Marseille, France

- Dr. André Nachbin, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Jorge Zubelli, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Sergio Rica, Department of Physics, Universidad de Chile, Santiago, Chile

- Dr. Susana Gómez, Instituto de Investigactiones en Matemáticas Aplicadas y en Sistemas, Universidad Nacional Autónoma de Mexico, Mexico City, Mexico

- Dr. Vladimir Tchijov, Facultad de Estudios Superiores, Universidad Nacional Autónoma de Mexico, Mexico City, Mexico

The participants from the hosting institution, Universitat Politécnica de Catalunya, were the following:

- Dr. Carlos Pérez

- Dr. Assensi Oliva

- Dr. Ricard Cónsul

- Dr. Manel Soria

- Dr. Jordi Cadafalch

The programme of the meeting can be found in Appendix B. We also show in the Appendix a screen shot of the web page for the event, which was created a posteriori (as the web site went live after this meeting, in April 2006). A summary of the research presentations offered in Barcelona was prepared by the project coordinator, and presented in the next SCAT meeting (see §3.2), and is also included in the Appendix.

The main goal of this meeting was for the SCAT members to present their ongoing research projects, such that a dialogue would be initiated among potential co-supervisors of grant holders. In this sense, the meeting was a success, as several coincidences of interest were identified, leading to conversations for

Success
Several areas of common interest were identified in this meeting, leading to joint supervision possibilities for grant holders.

promoting mobilities among the partners. In addition, the project coordinator made presentations about the ALFA Programme, and about the particulars of the SCAT project, including actions, budget and co-financing aspects. Discussions followed regarding how to best accomplish the project goals.

One extraordinary exercise was the "Speed Dating" activity, which —taking as model the social events of this nature— paired all possible combinations of scientists, and encouraged them to present their research interests in very few words. It was a fun activity, leading to much dialogue, in particular among those who might not have found a common ground otherwise.

The official visit to Barcelona Supercomputing Centre (BSC) was equally stimulating. The staff at BSC presented a seminar about the activities carried out at the centre, and the details of the supercomputer *MareNostrum*. The SCAT members toured the facility, and learned about the Grand Challenge projects in computational science and engineering which use the facilities.

The host institution also offered a tour of their laboratories, where research activities are carried out specializing in heat transfer and fluid dynamics, as well as solar energy, natural convection and other topics.

Last, but not least, the SCAT attendants participated in a session to create working groups or "SCAT Teams". These are:

Scholarships Team Formed by Agnès Maurel, Andrè Nachbin, Carlos Pérez-Segarra, Luis Salinas, and Vladimir Tchijov.

Science Topics Team Formed by Alberto Verga, David Emerson, Christophe Josserand, Jorge Zubelli, and Oscar Orellana.

Short Courses Team Formed by Eduardo Wesfreid, Ian Stewart, Manel Soria, and Mike Ashworth.

Disemmination Team Formed by Sergio Rica and Susana Gómez.

In addition, all Teams count with the participation of the project coordinator, Dr. Lorena Barba, and the SCAT Project Manager, Mr. Boris Drappier.

The SCAT project launch was object of several press appearances, which are detailed in §4-Dissemination.

3.2   First European SCAT Workshop

The First European SCAT Workshop was held in Daresbury Laboratory, United Kingdom, in June 2006. The thematic focus of this meeting was *Advanced Computational Research*. Representatives from the partner institutions, and guests, discussed how to solve their scientific problems of interest in appropriate computational infrastructure, in particular, high-performance computers.

In the scientific applications domain, the meeting's focus was on the problems of interest to the partners of the SCAT project. Participants gave presentations on their research programmes as well as the computational challenges they face.

In the technology domain, there were specialized lectures in the topics of cluster computing, parallel computing, debugging
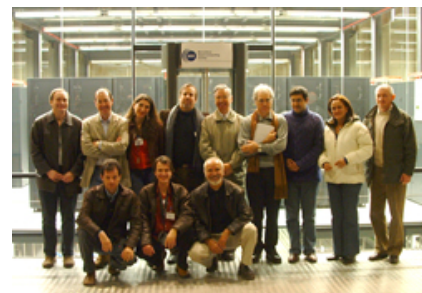
SCAT members pose in front of *MareNostrum* during the visit to Barcelona Supercomputing Centre

Theme
The focus of this meeting was on computational modelling leading to scientific discovery.

and profiling, performance tools, scientific libraries. There were also talks given by selected vendors of high-performance computing equipment and services.

Following is the list of international SCAT member who participanted in the Daresbury meeting:

- Dr. Lorena Barba, Department of Mathematics, University of Bristol, United Kingdom

- Dr. Ian Stewart, Department of Information Services, University of Bristol, United Kingdom

- Dr. Chris Allen, Department of Aerospace Engineering, University of Bristol, United Kingdom (self-funded attendance)

- Dr. Andy Ramsden, Learning Technology Services, University of Bristol, United Kingdom (self-funded attendance)

- Mr. Boris Drappier, SCAT Project Manager, University of Bristol, United Kingdom

- Dr. Agnès Maurel, École Supérieure de Physique et de Chimie Industrielles, Paris, France

- Dr. Stéphane Zaleski, Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

- Ms. Anne Bagué, Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

- Ms. Aude Champmartin, Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France (self-funded attendance)

- Prof. Oscar Orellana, Department of Mathematics, Universidad Técnica Federico Santa María, Valparaíso, Chile

- Prof. Luis Salinas, Department of Mathematics, Universidad Técnica Federico Santa María, Valparaíso, Chile

- Dr. Marcus Sarkis, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Duilio Tadeu Conceçao, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Fernando Lund, Department of Physics, Universidad de Chile, Santiago, Chile

- Dr. Felipe Barra, Department of Physics, Universidad de Chile, Santiago, Chile

- Dr. Vladimir Tchijov, Facultad de Estudios Superiores, Universidad Nacional Autónoma de Mexico, Mexico City, Mexico

The participants from the hosting institution, Daresbury Laboratory, were the following:

- Dr. David Emerson

- Dr. Mike Ashworth

- Dr. Christine Kitchen

- Dr. Andy Sunderland

- Dr. Yonghao Zhang

The conference programme included scientific talks by the SCAT members, as well as presentations from selected vendors who had the opportunity to showcase their technology (see the programme details in Appendix B). One highlight of the programme was a distance seminar delivered via Access Grid, in which members of the team that developed the parallel PETSc library presented a tutorial.

One of the project goals is the experimentation and gaining of confidence with distance collaboration technology. This topic is discussed in more detail in §5. The Access Grid seminar which was held during the meeting at Daresbury was a great success in this direction. Access Grid is a technology which uses the Grid to support group-to-group interactions by the transmission of multi-media and live broadcast of video, audio, and real-time computer applications —such as presentations being delivered on the software *Power Point*. We used this technology to carry out two tutorial sessions on the use of the PETSc library (Portable, Extensible Toolkit for Scientific Computation), developed at Argonne National Laboratories for more than 10 years now. This library is a very powerful tool for the development of large-scale scientific codes for parallel computers.

The success of the Access Grid sessions, which were broadcast from Chicago, required several tests to be carried out before the Daresbury meeting, for which system administrators and other support staff participated in three sites: Daresbury Laboratory, University of Bristol, and Argonne National Laboratory. The exercise proved extremely useful, resulting in a first-hand demonstration of the capabilities of the technology for distance collaboration.

Moreover, the participation of the team from Argonne led to their agreeing to send an expert to deliver a short course in the upcoming summer school, held in Valparaiso, Chile (January 2007). This was funded by Argonne National Laboratory.

The meeting at Daresbury, only the second event organized by the SCAT project, already drew interest outside the network. On this occasion, as mentioned above, several representatives from high-performance computing vendors delivered presentations. These are described following:

Intel Dr. Vadim Roussin presented an overview of the benefits and the value proposition of Intel software development products for code generation and performance analysis — including compilers, performance libraries, VTune Performance Analyzer, Intel threading tools and cluster tools.

Mr. James Cownie presented Cluster OpenMP, a new addition to the Intel compiler suite. Cluster OpenMP allows

Success
Two distance seminars were delivered from Chicago via Access Grid (archive photo).

slightly modified OpenMP programs to be run on a commodity cluster, providing an easier way to port programs to clusters than having to explode them and recode in MPI.

Allinea Software Allinea Software offers a suite of integrated products for parallel and high performance computing. Its Distributed Debugging Tool (DDT) and Optimization and Profiling Tool (OPT) set the standard for developers of large-scale scalar and parallel applications.

Dr. Stef Salvini made a tutorial presentation of the debugging and profiling tools, with live examples of the type of output generated by the optimization exercises on high-performance computer codes.

Apple The presentations of representatives from Apple Computers focused on two topics: the use of podcasting solutions for e-learning, and the use of Apple software and hardware in scientific research.

Dr. Massimo Marino gave the presentation "Mac for Science: from Data Analysis to Publication, seamlessly". It consisted of an overview of Apple presence and commitment to science, the appealing traits of Mac OS X for researchers, and real life examples of use of a platform today posed as ideal for scientific research.

Mr. Alan Greenberg, Apple's EU manager for Education, discussed the recent and influential uses of *podcasting* technology integrated with *iTunes* for delivery of classroom materials.

The word *podcast* is a combination of "broadcast" and "iPod". It is a term that has been coined to refer to a new medium, which combines easy home-production of recorded audio, with a system for distributing the media over the internet using RSS (Really Simple Syndication).

A podcast is analogous to a recorded radio programme, with the advantages that one can "subscribe" via software such as Apple's media player *iTunes*, to download new episodes automatically, and one can transfer the media to portable players to listen to at any time.

In the SCAT project, we have become interested in the podcast phenomenon for use in distance learning. We have been experimenting with the technology so that we can reach our partners in Latin America and Europe with the audio of lectures and meeting presentations. See the Online Learning section of our web site.

At the SCAT meeting in Daresbury, we had several events related to this new technology. A case study in the UK was discussed, with a presentation by D. Bill Ashraf from Bradford University, who made the BBC news recently with his podcast of lectures. Dr. Ashraf came to Daresbury on Monday afternoon, invited by Apple to discuss his experience.

Another case study was presented of the use of podcasts to disseminate science: the project of adding podcasts to the programme of the CERN Webcast Service. The presenter was Dr. Sylvano De Gennaro, who also came invited by Apple.

Participants on the first day of meeting, including representatives from Apple, and the guests Dr. Sylvano De Gennaro and Dr. Bill Ashraf.

We also had the welcome participation of Apple's Gordon Shukwit, Senior Manager with Apple US Education Solutions. Gordon gave a lively presentation on e-Learning and Apple solutions for education.

3.3 Second European SCAT Workshop

Held in Paris, September 2006, the Second European SCAT Workshop once again proved a success in attendance and activities. This time, the event was jointly hosted by two institutions: École Supérieure de Physique et de Chimie Industrielles, and Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie.

The theme for this workshop was *Mathematical Modelling and Challenges in Computational Science*, concentrating in particular in four sub-topics:

1. Turbulence

2. Granular flows

3. Interfacial hydrodynamics

4. Bio-mechanics

Once again, the meeting drew attention beyond the SCAT network. On this opportunity, there were invited lectures offered by the following speakers:

- Arnaud Chauvière, Politécnico Turin, Italy

- Georges Debrégeas, Laboratoire de Physique Statistique, École Normale Supérieure (LPS-ENS), Paris

- Stéphane Popinet, National Institute of Water and Atmospheric Research, New Zealand

- Olivier Cadot, École Nationale Supérieure de Techniques Avancées, Paris

The full programme of this meeting is included in Appendix B, as well as screen shots of the meeting web site.

Following is the list of international participants in the Paris SCAT meeting:

- Dr. Lorena Barba, Department of Mathematics, University of Bristol, United Kingdom

- Mr. Boris Drappier, SCAT Project Manager, University of Bristol, United Kingdom

- Dr. David Emerson, Computational Science and Engineering Department, Daresbury Laboratory, United Kingdom

- Dr. Xiaojun Gu, Computational Science and Engineering Department, Daresbury Laboratory, United Kingdom

SCAT members pose in front of 10 rue Vaquelin, the historic working place of Pierre and Marie Curie.

Theme

The thematic focus of this meeting was on Mathematical Modelling and Challenges in Computational Science.

- Dr. Stéphane Le Dizés, Institut de Recherche sur Phénomènes Hors Equilibre, Marseille, France

- Dr. Laurent Duchemin, Institut de Recherche sur Phénomènes Hors Equilibre, Marseille, France

- Dr. Manel Soria, Universitat Politécnica de Catalunya, Barcelona, Spain

- Dr. André Nachbin, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Jorge Zubelli, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Sergio Rica, Department of Physics, Universidad de Chile, Santiago, Chile

- Dr. Susana Gómez, Instituto de Investigactiones en Matemáticas Aplicadas y en Sistemas, Universidad Nacional Autónoma de Mexico, Mexico City, Mexico

- Prof. Ismael Herrera, Instituto de Geofísica, Universidad Nacional Autónoma de Mexico, Mexico City, Mexico

The local participants were the following:

- Dr. Agnès Maurel

- Dr. Jose Eduardo Wesfreid

- Dr. Christophe Josserand

- Dr. Maurice Rossi

- Dr. Stéphane Zaleski

- Dr. Joël Frelat

- Dr. Pierre-Yves Lagrée

3.4 First Latin American SCAT Workshop and Summer School

The first SCAT meeting to be held in Latin America included scientific presentations, sessions to discuss project actions, and a series of mini-courses in a summer school format.

Universidad Técnica Federico Santa María, in Valparaíso, was host to the event which drew the interest of staff and students inside and outside of the university.

The programme of mini courses was highlighted by the participation of two experts from outside the network:

Theme
The thematic focus of this meeting was Advanced Scientific Computing and Applications, and activities included a series of nine mini-courses.

- Prof. Charles Meneveau, the *Louis M. Sardella Professor* of Mechanical Engineering at Johns Hopkins University (Baltimore, MD), and head of the Turbulence Research Group there, gave a two-lecture course on *Turbulence Simulation*.

- Dr. Matthew Knepley, from the team of developers of the PETSc library, at the Mathematics and Computer Science Department, Argonne National Laboratory (Chicago, IL), gave a four-lecture course on the PETSc library.

Only a couple of months before this event, Universidad Santa María had delivery of its first computer cluster, consisting of 52 processors. This machine is the pride of the Scientific Computing group in the university, and the local SCAT members are of course involved in the project.

During the visit of the expert from Argonne, Dr. Matthew Knepley, to give his set of lectures, he himself worked on the new cluster to install and test the latest version of the PETSc library. Thanks to this, his lectures had a set of hands-on practical tutorials using the library. This added bonus of direct assistance in the installation of what is a very specialized library was very much appreciated by the local SCAT members.

As for all SCAT meetings, registrations for this event were received via an online form on the web site. In this opportunity, more than 60 registrations were received online (including SCAT member participants). Perhaps a few people registered and then did not attend, we do not know. But nevertheless, this shows an extraordinary interest in the activity, and in fact there were attendants from other universities as far as Atacama in the North and Temuco in the South of Chile.

The following SCAT members attended the Valparaíso event internationally:

- Dr. Lorena Barba, Department of Mathematics, University of Bristol, United Kingdom

- Mr. Boris Drappier, SCAT Project Manager, University of Bristol, United Kingdom

- Dr. David Emerson, Computational Science and Engineering Department, Daresbury Laboratory, United Kingdom

- Dr. Mike Asworth, Computational Science and Engineering Department, Daresbury Laboratory, United Kingdom

- Dr. Alberto Verga, Institut de Recherche sur Phénomènes Hors Equilibre, Marseille, France

- Dr. Manel Soria, Universitat Politécnica de Catalunya, Barcelona, Spain

- Dr. Assensi Oliva, Universitat Politécnica de Catalunya, Barcelona, Spain

- Dr. André Nachbin, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Marcus Sarkis, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil

- Dr. Pierre-Yves Lagrée, Laboratoire de Modélisation en Mécanique, Université Pierre et Marie Curie, Paris, France

Participants in the courses on parallel computing and applications, Chile (photo by *El Mercurio* newspaper).

Success

There was huge interest in the Valparaíso summer school, beyond the SCAT network. Students and staff from Universidad Santa María, as well as other universities in Chile, attended the courses.

The following SCAT members attended travelling from Santiago, being members of the Department of Physics, Universidad de Chile:

- Dr. Felipe Barra

- Dr. Marcel Clerc

- Dr. Patricio Cordero

- Dr. Rodrigo Soto

And finally, the following local SCAT members participated:

- Dr. Oscar Orellana

- Dr. Luis Salinas

- Dr. Franco Perazzo

Note that the Lecture Notes for all the courses offered during the Valparaíso Summer School have been made available on the Online Learning section of the SCAT web site.

One further highlight at this SCAT meeting was the selection of a winner among all the SCAT grantees of 2006 for the *Apple SCAT Prize*. This prize was offered by Apple Computers during the meeting in Daresbury, and it consisted of a brand-new Mac-Book laptop computer, to be delivered as a gift to the best SCAT grantee. The contest was announced in early December 2006, and all SCAT grantees were invited to participate. Entries were received electronically until the day before deliberations, and all SCAT members in attendance were invited to read the entries, discuss their winning features, and finally participate in a blind vote. The honour went to Mr. Felipe Cruz, currently doing a mobility at University of Bristol, from Universidad Técnica Federico Santa María. See the News section of our web site for more, and the poster announcement in Appendix B.

An obviously happy Felipe Cruz received the SCAT Apple Prize in Bristol.

3.5 Upcoming SCAT Meetings

The following two SCAT meetings (corresponding to the second year of operation) have already been scheduled, and will be:

4–10 June 2007 Third European SCAT Workshop and Summer School, France — co-organized by Institut de Recherche sur Phénomènes Hors Equilibre, Marseille. The topic is *Modelling and Simulation of fluid vortices, and vortex sheets*.

12–16 November 2007 Second Latin American Scientific Workshop, Mexico — co-organized by Universidad Nacional Autónoma de Mexico. The topic is *Computational Science and Engineering for Development, Resources, Environment*.

Currently, a web page is already in place for the next event in June 2007, and registrations are already being received. Like in Paris and in Valparaíso, the event is attracting participation from beyond the network. There are many experts who have agreed to participate in the courses, and additional funding has been obtained by the local organizers to secure their attendance. We expect another great SCAT success.

Section 4

Dissemination

Summary   The SCAT project coordination team has taken great interest in the adequate dissemination of all the project's actions. In previous sections of this report, we have already described several dissemination efforts in relation with the mobility grant scheme and the international meetings and courses. For example, posters have been produced and sent to the partner institutions for Calls for Applications for Grants, and meeting announcements. In this section, more details will be offered about press and web appearances of the SCAT project.

4.1   Project launch

The start of the SCAT project was announced by press releases by University of Bristol, and one of the Latin American partners, Universidad Técnica Federico Santa María.

- The Bristol press release has been printed into PDF and is included in Appendix C, but it is still also available as a past News item on the university web site.

- The news item by Universidad Técnica Federico Santa María is no longer available on their web site, but we made a complete copy of the HTML files, and have a mirror on the SCAT web site's News archive. We also attach a PDF printout in the Appendix.

In addition to the University web site, the press release by Universidad Técnica Federico Santa María appeared in a series of online technology news services, such as, Bureaudeprensa.com, Chiletec.com, Universia.cl and others. (Printouts attached in Appendix C.)

A month later, there were two more press appearances regarding the start of the project: an announcement on the web site of the Zonta International Foundation (since Dr. Barba is a Fellow), and an appearance in the local newspaper in Valparaíso, *El Mercurio* (both printed and online versions). See copies of the online versions in Appendix C.

In the event of the SCAT Project Launch meeting in Barcelona, there were several press appearances, including a full-page interview of the project coordinator, Dr. Barba, in the local newspaper,

Goals
Dissemination goals addressed mainly the project website, the development of online learning materials, and the proceedings from the international workshops.   In fact, we have had unexpected success with press appearances and other publications for public interest.

Diari de Terrassa. Again, see Appendix C for reproductions of these.

4.2   Other appearances in the press

The following press appearances were achieved by the SCAT team after the project's start-up period, and are attached in Appendix C.

- In March 2006, there was a small appearance in the publication *Perfiles Industrial y Aeronáutico* of Universidad Politécnica de Catalunya, announcing the recent launch meeting of the SCAT project at the University.

- In April 2006, an interview with SCAT member Dr. Vladimir Tchijov appeared in the magazine *Gaceta UNAM* of Universidad Nacional Autónoma de México, accompanied by an advertisement of the mobility grants programme of the SCAT project.

- Another advertisement of the mobility grants programme appeared in May 2006 in *Gaceta UNAM*, thanks to the efforts of Dr. Tchijov.

- Dr. Tchijov is interviewed again and talks about the SCAT project to *Gaceta UNAM* in the October 2006 issue.

- A piece about the SCAT project was included in the Fall 2006 issue of the Bristol *MathsGrad* alumni magazine; reproduced in Appendix C.

- In September 2006, a full-feature article about the SCAT project appeared in the University of Bristol's *Research* magazine, which is widely distributed across the University and outside. The full online version of this magazine can be found on the University web site. The article is reproduced here in Appendix C.

- In the event of the First Latin American SCAT Workshop and Summer School (Valparaíso, Jan. '07), there was a press conference on site, resulting in several press appearances. Reproduced in Appendix C are a local newspaper article and online articles appearing on the university web site.

4.3   SCAT Project Web Site

The project web site went live in the beginning of April 2006. It was directed as a professionally-designed, standards-compliant site with CSS (Cascading Style Sheets) technology. The content was carefully crafted to offer an informative and attractive looking site.

The web site has six main sections —in addition to the front page— reflecting the main reasons why visitors come to the site:

1. About Us

2. Research

3. Mobility Grants

4. Online Learning

5. Meetings & Events

6. News

The section on Mobility Grants gives all the information that a prospective applicant needs to prepare an application. In addition, there is an online form, so that applications are submitted electronically. Information is offered regarding eligibility, how to chose a host institution, supporting documents, and a form for requesting reference letters. There is also a sub-section of "Frequently Asked Questions", or FAQs, with fourteen question-answer pairs.

In the section on Online Learning we have already added Lecture Notes for the courses taught in the First SCAT Summer School, held in Valparaíso, January 2007. These include two invited courses by experts from outside the SCAT network, as described in §3.

Note that the SCAT coordination team has obtained an .EU domain for the project website, which also increases visibility: http://www.scat-alfa.eu/

Section 5

Distance Collaboration

Summary By its very nature, a project of the ALFA Programme involves the collaboration of people in multiple institutions. But with its focus in large-scale scientific computing, the SCAT project is uniquely placed to experiment with and routinely utilize distance collaboration technologies. This section describes our efforts using online learning environments and video conferencing using the internet, in order to facilitate the distributed endeavours of the SCAT network.

5.1 Use of *Blackboard*

Blackboard is a software system which provides what is known as an 'online learning environment'. It is used in many universities across the world to enhance the learning experience by creating a browser-accessible space for sharing documents, media and online discussion fora.

The coordination office at the University of Bristol requested a space be created in the university's *Blackboard* server for exclusive use of the SCAT project. All project members were opened an account, as the online environment is secure and accessible by login and password.

In the SCAT *Blackboard* space we have created secure repositories for all project documents, such as forms for reimbursement of travel expenses, guidelines for travel both for meetings and mobilities, all documents pertaining to the mobility grants programme, etc. Thus, all SCAT members can easily access the project'w working documents, while at the same time these are kept private (in contrast with using a web site, for example).

Moreover, using the 'Groups' tool of *Blackboard*, exclusive areas were created for each grant holder and their host and home supervisors (plus the coordinating team), to share mobility grant application documents and other material pertaining to the grantee. Each mobility has its own 'Group', including private file sharing and discussion board.

For each SCAT meeting, a repository has been created where the materials for scientific presentations have been posted, so that SCAT members can later refer to the slides of presentations that they have attended (or, indeed, missed). Thus, we facilitate the access to research information among the partners, but keep it

private from the wider internet.

And finally, we have made use of the protected area for online discussions, such as for example, to discuss and agree on the requirements that would be imposed on mobility grant applicants, the alternatives and solutions for providing appropriate health coverage in the different host countries, agreeing on research topics for grant holders, etc.

The exercise of using a tool like *Blackboard* has proven quite successful, although it did take some time for the users to become accustomed to it (indeed, some members still have not taken full advantage). Some screen shots of the SCAT Blackboard site are shown in Appendix D.

5.2   Video Conferencing

We have already described in the section on SCAT international meetings how a distance seminar was delivered from Chicago to Daresbury during our First European SCAT Workshop. This activity required quite a bit of preparation and testing, and proved to be extremely successful.

Apart from the experimentation with Access Grid, which is a multi-point video conference system, we have endeavoured to gain experience with point-to-point video conference. At the beginning of the project, two small webcams were given to each partner institution, and a survey was carried out of all the different platforms in use for desktop computing in all sites. We researched and identified different tools for cross-platform video conference. For example:

Mac to Windows The Apple *iChat* program allows communication with PC users who have the free *AIM* messaging program. However, the *iChat/AIM* combination does not allow communication with Linux users.

Another option is *ohphoneX* or *XMeeting* —both of these are different generations of the same software; the latest version is *XMeeting*, but it requires Mac OS X 10.4. Both video conference clients are H.323-compliant applications for both IP telephony and video conference. They use the protocol stack developed by the OpenH323 Project. (Both are free software.)

Mac to Linux Video communications are possible using either *ohphoneX* or *XMeeting* and *GnomeMeeting*. (Both are free software.)

Windows to Linux The Windows software *NetMeeting* comes included in the Windows installation, but needs to be configured. It is H.323-compliant, and therefore able to communicate with *GnomeMeeting* —this last free application is now also known as *Ekiga*.

During the first year of operation of the SCAT project, we have been able to carry out several test video conference sessions. However, routine use has only been reached by a few members.

We continue to research the technical alternatives, and educate our members with the aim of reaching a critical mass. As more grant holders commence their mobility with distance-joint supervision, the experience gained in internet-based communications will start proving invaluable.

Section 6

Modifications brought to the Project

Summary In this section of the report we add some brief comments regarding the Financial Interim report (for lack of a better place). However, the main goal of the section is to present and justify two modifications to the project which entail a change in the contract: joint coordination, taking into account personnel costs at the network institutions for preparation of international meetings; and, a transfer from the budget heading 'Other Eligible Costs' to the budget heading 'Personnel', reflecting the joint coordination. These two modifications are requested for the remaining project duration.

6.1 Financial Interim Report

6.1.1 Audit

The expenditures have been checked and audited against the supporting documents and the contract. The declared spending of the first period, amounting €227,126.96 has been duly justified, and approved by the corresponding audit. (Audit Certificate enclosed with payment request, according to ALFA regulations.)

6.1.2 Note on the expenditures incurred

Personnel costs Even though the first financial report spans over a period of 14 months (25 Nov. '05 – 31 Jan. '07), the overall expenses in Personnel are calculated over one year (Nov. '05 to Oct. '06). This is because the time sheets of the personnel involved, plus their signed declarations (required as supporting documents), plus the resulting breakdown of salaries were not available at the date of the Audit. Those expenses will therefore be included as costs of the second period of activity.

6.2   Minor Changes brought to the Initial Budget

Minor changes to the budget (defined below) have been notified in writing to the contracting authority, in each case. Thus, we abide ourselves to the regulations of the ALFA Programme, in particular Art. 9, paragraph 2 of the contract provisions, which says:

> ... where the amendment does not affect the basic purpose of the Action and the financial impact is limited to a transfer within the same budget heading, or a transfer between budget headings involving a variation of 15% or less of the amount originally entered under each relevant heading for eligible costs, the Beneficiary may apply the amendment and inform the Contracting Authority accordingly in writing.

Budget versions v-1-0 to v-1-4 include minor changes as follows:

v-1-1 (Jun. '06) Technology & equipment; travels; inclusion of travels to all meetings for the project manager; update of IT expenses and inclusion of transport costs in Daresbury (as approved by the ALFA office).

v-1-2 (Aug. '06) Technology & equipment: purchase of new software items for the project

v-1-3 Correction of small errors in previous budget

v-1-4 Update of meeting locations; mobilities; short courses; personnel. The meeting in Valparaíso swaps with the one in Paris; meeting travels and allowances were updated; due to Dr. Thomas Séon being granted an unexpected mobility from EU to LA, the number of mobilities from EU to LA is modified for year 1; short courses start in Valparaíso (brought forward from year 2); personnel costs are modified taking into account updated time sheets of personnel contribution within the University of Bristol.

6.3   Proposed Modifications to the Contract

6.3.1   Joint coordination

The project proposal was initially presented with a single coordinating institution: the University of Bristol, acting as the legal representative and the Technical and Financial coordinator.

After one year of activity, we have noticed that this has not proven to work effectively. All network members have actually contributed their part to the coordination of the project in two ways:

1. Day-to-day coordination —grant holder administrative assistance and SCAT teams: Scholarship team, Scientific team, Dissemination team, Short Courses team, network enlargement, etc.

2. Meetings preparation —organisation, hosting, dissemination, logistics, etc.

In practice, this means that this cost is borne by the institutions themselves, and that it is not accounted for into the budget.

To justify the request of inclusion of personnel costs in the partner institutions for the concept of administrative support and meeting organization, we have collected records and time sheets for this concept in Year 1. We use this only as justification, as we do not request the retroactive inclusion of these costs. We request the inclusion of the personnel costs in partner institutions for the remaining duration of the project.

Two types of expenses have been scrutinized for the justification of this request: meeting preparation and shared coordination.

Meetings preparation: Time sheets (attached in Appendix E) of the host tutors when we have had meeting at their institutions show that they spend in average 6.5 days on the month of meeting and 2 days during the months preceding the meetings. Time sheets provided are for the events in Daresbury and Paris only; for the meeting in Barcelona the cost is estimated at the average wage of the other two. If we consider the contribution of the three meetings held in 2006, the total expense actually incurred and met by the institutions was €10,031.35. This could have been a significant and justified contribution to the co-financing of the project.

Shared coordination: Besides the SCAT coordinator, the project manager and the support personnel considered at the University of Bristol, all partner institutions contribute with their time on a monthly basis. It is estimated that 1 day is spent monthly by each member in their respective institution, which was estimated at a cost of €16,635.16 annually (considering 9 institutions besides Bristol, with one interlocutor in each institution; the cost has been estimated with the average wage of tutors in Paris and in Daresbury).

Therefore, a *joint coordination* is requested for day-to-day shared coordination (worth €16,635.16, and directly contributing to the project co-financing) and for meetings preparation (worth €10,031.35). The inclusion of these real costs incurred by the partners would contribute to the budget a total of €26,666.51 per annum.

6.3.2   Transfer of Joint Coordination cost between Budget Headings

The suggested joint coordination will have no effect in the overall budget of the project, because we propose a transfer of its cost from another budget heading, as follows.

Our current budget (v-1-4) shows an amount of €162,000.00 in 'HPC time' for the whole project duration. In year 1, €40,500.00 have been considered for this concept, which has been unspent. One of the reasons for this item being unspent is the late start of the mobility grants programme. But more importantly, we have been able to obtain access to computing facilities in the host institutions *free of charge*.

Although we do expect that duly justified expense in 'HPC time' will be incurred in subsequent periods of the project, the total will be significantly lower than anticipated at the project proposal stage (thanks to the generous policies in place at European universities for provision of computing resources).

Therefore, we would like to transfer from the budget line 'HPC time' €53,333.02 to the line 'Personnel' for years 2 and 3, accounting for the joint coordination described in the previous section.

'HPC time' would then show a total of €108,666.98 for the whole project duration —this represents a change of 28.22% in the budget heading E 'Other Eligible Costs'. Meanwhile, 'Personnel' would total €372,234.22 —changing 16.73% with respect to the general budget heading.

Due to the changes being above the threshold for minor changes (15% of the budget heading), as explained in §6.2, we duly request a change in the contract to effect this modification.

Section 7

Conclusion

This Interim Report covers 14 months of activity of the SCAT project (which has a total duration of 36 months). In this time, all the programmed international meetings have been carried out (three in the first year, plus the first meeting corresponding to the second year), with generous attendance and considerable success. The mobility grants programme has commenced, but four months later than anticipated at the project proposal stage. The reason for this is that the preparations needed for a successful mobility grants programme was underestimated. In particular, the partners needed to develop a rapport and understand the subjects of research interest at the differen sites, which could only be accomplished after the first SCAT meeting (the project launch in February 2006).

The SCAT coordinating team has placed great emphasis in the dissemination aspects of the project. A professionally designed, standards-compliant project web site was produced, going live after slightly more than four months of operation (7 April 2006). The opening of calls for applications cannot be considered to start before the availability of full information on the web site and the online application form. This is another factor bringing the date of the first round of selection for mobility grants to June 2006.

The first grantees travelled to their host institution at the end of September 2006. Of these, one grantee (Mr. Helmut Wahanik) has concluded his mobility in March 2007 and returned to his home institution (IMPA, Rio de Janeiro) to start his PhD studies. His research internship in Bristol gave him much needed training in computational science, as his background was mainly in pure mathematics. Both the grantee and his home supervisor are confident that the skills gained will contribute to his success during his doctoral studies.

A second grantee continues his stay in Paris, and has provided us with a sense of what he has learned through a testimonial with which we have concluded section §2 of this Interim Report. He will return to Chile in June 2007 to continue with his MSc degree there. A third grantee of the first round is continuing his research visit in Bristol from Chile. He has become motivated to apply for PhD study, and pursue a research career, which is a welcome development. Finally, there was one grantee of the first round who declined, as he was offered another place as a post-doctoral fellow in Warwick. From this experience, we recognize

the difficulty of competing with other opportunities for young scientists at this stage of their career, compounded with the short duration of the SCAT mobilities in comparison.

Four more grantees are currently in the stages of preparation for mobility, while applications are being received for the fourth round of selection, for mobilities commencing in Summer 2007. Overall, except for a late start, the mobility grants programme is proving a success.

The next events of the SCAT project are in course of preparation. There will be a meeting and summer school locally organized by the partners at IRPHE to be held in June 2007. And next, a meeting with short courses to be held in Mexico, in November 2007. These activities will complete the programme of three-yearly meetings for the second year of operation of the project.

The present Interim Report is accompanied by a Financial Report, as instructed by the ALFA guidelines, which has been duly audited and approved. The Audit Certificate is attached with the Financial Report, together with the request for pre-financing for the operations of the second and third years of project.

Bristol, March 2007.

Appendix A

Documentation for Grant Holder Mobility

Call for Applications

Research scholarships in Europe

SCAT

SCIENTIFIC COMPUTING ADVANCED TRAINING

Mobility grants worth €16,520.

You must be a graduate student (MSc or PhD) or a post-doc at one of the partner institutions, and wish to take a research project of approximately 8 months duration at a European partner institution. You must be skilled with computers, proficient in English, a good team worker and an independent thinker. **First round of selection:** 15 March-15 June 2006. *Apply now!*

More information:

scat-alfa@bristol.ac.uk
http://www.scat.bristol.ac.uk

Partners:

Departamento de Física, Universidad de Chile

Depto. de Matemática & Depto. de Informática
Universidad Técnica Federico Santa María, Chile

Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas,
Instituto de Geofísica & Facultad de Estudios Superiores Cuautitlán
Universidad Nacional Autónoma de México

Instituto Nacional de Matemática Pura e Aplicada
Rio de Janeiro, Brazil

Department of Mathematics, University of Bristol, U.K.

Centre Tecnològic de Transferència de Calor
Universitat Politècnica de Catalunya, Barcelona

Laboratoire de Modélisation en Mécanique
Université de Paris VI - Pierre et Marie Curie

Computational Science and Engineering Department
Daresbury Laboratory, CCLRC, Warrington U.K.

Institut de Recherche sur les Phénomènes Hors Equilibre
Universités d'Aix-Marseille I et II, Marseille, France.

École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris
Laboratoire Ondes et Acoustique & Physique et Mécanique des Milieux Hétérogènes
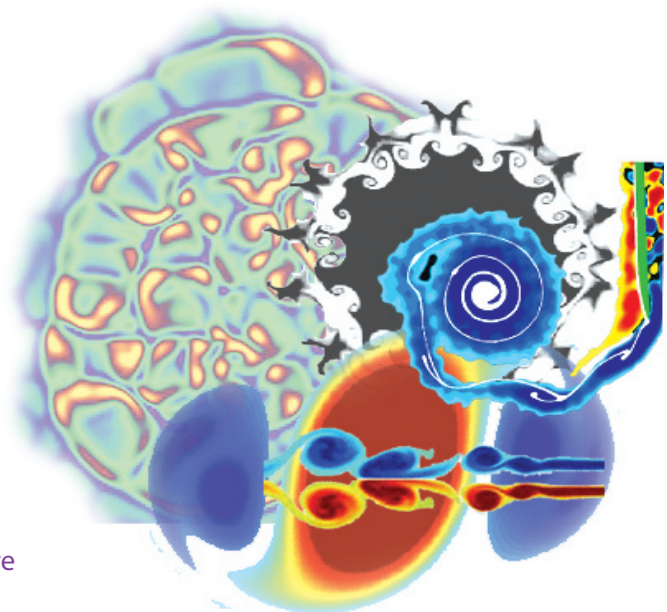
Guideline for Applicants

SCAT project mobility grants

This project is intended for graduate students (MSc or PhD) or post-doctoral fellows registered at, affiliated to, or graduated form one of the network partner institutions.

We only accept applications via our online forms, available at the website:

http://www.scat.bristol.ac.uk/

What is the topic of the SCAT project?

The topic of the SCAT project and the associated grants for study and research overseas is **scientific computing**. The research projects to be carried out during the periods of study in a host institution will deal with an application area in science or engineering, where advanced computational research can deliver new and important results.

When can I apply?

You can send your application for the first round of mobility grants until the **15 June 2006**. There will be two other rounds after this, with deadlines 15 November 2006 and 15 November 2007.

Who is eligible?

Any EU national or any national from a Latin American country can apply for a grant, provided he/she has any of the following links with one of the SCAT member institutions listed below:

- is a registered student at one institution;

- is an appointed post-doctoral researcher at the institution;

- is a graduate (MSc, PhD) from the institution..

The following institutions are members of the network:

DFI-UCh	Universidad de Chile (Departamento de Fisica)
DL-CCLRC*	Daresbury Laboratory, Council for the Central Laboratory of the Research Councils (Computational Science and Engineering Department), U.K.
ESPCI	École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (Laboratoire Ondes et Acoustique & Physique et Mécanique des Milieux Hétérogènes)
IMPA	Instituto Nacional de Matemática Pura e Aplicada, Brazil
IRPHE	Institut de Recherche sur les Phénomènes Hors Equilibre, Universités d'Aix-Marseille I et II
LMM	Laboratoire de Modélisation en Mécanique, Université de Paris VI (Pierre et Marie Curie)
UNAM	Universidad Nacional Autónoma de México -- Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas ; Instituto de Geofísica ; Facultad de Estudios Superiores Cuautitlán.
UOB	Department of Mathematics, University of Bristol. U.K. **–Coordinating Institution**
UPC	Centre Tecnològic de Transferència de Calor, Universitat Politècnica de Catalunya
USM	Departamento de Matemática & Departamento de Informática, Universidad Técnica Federico Santa María, Chile

Where can I go during a mobility grant?

You can apply for a grant to go to any of the mentioned institutions, provided it implies an overseas mobility (a student at any EU institution would go to a LA one, and vice-versa).

How long are the mobilities?

Scholarships are granted for an average 8 month period. This includes the preparation the travel, the necessary time for accommodation, and the research project itself. Some stays may be slightly shorter, some may be slightly longer; it will depend on your research project and the respective supervisors in the institution of origin and the host.

Pre-requisites:

For application, you should comply with the following requirements:

I. **A Bachelor of Science or equivalent** in an area of mathematics, physics or a branch of engineering;

II. **A strong mathematical background**;

III. **Proven English language skills**, e.g. by standard tests such as TOEFL, IELTS, MELAB. Other tests may be accepted on a case by case basis. Language improvement will be offered, when required;

- If you don't have the scores yet but are registered for a test, please provide a copy of the document confirming your registration, with date of examination;

- If you have not taking a test nor are you registered to take a test, you can justify your command of the English language by proven evidence such as a degree obtained in English, a stay in an English speaking country, publications in English etc, and you may be exempt of taking the test at the application stage. A language test (TOEFL or other) will be required in this case after the selection of the grant-holder, but before the commencement of the mobility grant.

IV. **Previous experience** in research and/or any publication;

V. **Computer programming skills**;

VI. **Two Reference Letters** from people who have agreed to act as referees. A referee form is available on the Website next to this guideline, and must be filled and signed by the applicant. The letters of reference must be sent by the referee directly to the SCAT coordination office in Bristol, as stated in the referee form;

VII. **Personal Statement** expressing elevated commitment to your professional development and an inclination towards research. The Personal Statement should include at least the following information:

- Detail of the degrees obtained by the applicant and his/her projects and/or further studies to be undertaken (copies would be required at a later stage);
- Personal motivation of the applicant explaining why he/she chooses this programme;
- Description of previous research projects, papers, contribution and/or publications;
- Name of two SCAT members: one acting as your tutor at your institution of origin, and one who will be your supervisor at the host institution.
- Statement evidencing the knowledge of the English language.

How do I apply?

The process is in 3 steps:

I. Apply online at http://www.scat.bris.ac.uk/mobility_grants/applications/

o All fields marked with a * are mandatory.

o In the *Comments* box, we ask you to mention the name of your SCAT tutor and your SCAT supervisor (see VII above).

o Supporting documents should include:

- Curriculum Vitae

- Personal Statement, 1 page max. (as detailed previously under point VII)

- Abstract of the proposed project, and why you chose the host institution

- Previous related experience and research training

- Evidence of knowledge of the English language as stated in III

- Two referee forms according to statement VI.

II. Reference letters should be received by the coordination office in original (preferably sent directly by your referees)

III. Your application will be reviewed by a selection committee, and you will be contacted depending on the progress of your application.

IV. If you are selected, you will be asked to send:

o Photocopy of your passport, as proof of nationality.

o Certificate of student status and/or certified copy of your diploma, or letter certifying your appointment if you are a researcher at one of the member institutions.

o English test scores, when applicable.

What is included in the grants?

I. Preparation for mobility: in some cases, the institution of origin may incur expenses prior to the mobility. These may be for concept of language or cultural training, or other required training. The maximum allowable expense in this heading is €600.

II. Administration support to grant-holders: comprises up to 500 EUR per semester and grant-holder, in concept of registration fee, medical insurance, exam rights, academic fee and other related costs.

III. Round-trip intercontinental travel, airport transport, and travel insurance, up to a maximum of €1500.

IV. Scholarship payments: grants are inclusive of a fixed monthly stipend of €1500 for living expenses and all other expenses of the grant-holder during their stay at the host-institution.

V. Language upgrading at the host institution: in necessary and justified cases, an amount up to €1500 can be given to grant-holders for language improvement.

Responsibilities of grant holders:

<u>Availability of the Grant-Holder</u>: by sending the application, the applicant undertakes to accept the grant if his/her application is successful. This entails willingness to travel abroad and availability for the whole length of the scholarship, with a full time dedicated stay at the host institution.

<u>Travels</u>: The successful applicant will be asked to make all necessary arrangement for his/her mobility (i.e. travel arrangements and booking – including cancellation insurance with full refundable airfare-, accommodation, subsistence, etc). He/she will have support from the SCAT members.

<u>Administration requirements</u>: the grant-holder is asked to ensure his/her registration at the host institution, the completion of the language improvement (when required), and to comply with all required steps in the host country (customs, visa and passport, etc). The grant-holder is also asked to buy a full health insurance adapted to the country of the host institution (if applicable). This latter cost would eventually be met by the SCAT mobility scheme.

<u>General provisions:</u> The SCAT mobility scheme will under no circumstances be responsible or liable for any loss, damage, injury, sickness, disease, death, delay, expense, or inconvenience caused to or by the grant-holder or any third party, resulting directly or indirectly from any act, negligence, default or omission of any kind.

Furthermore, the SCAT mobility scheme has the right to put an end to the scholarship at any moment, under justified circumstances or by decision of the majority of the members of the SCAT Scholarship Team.

What you will get at the end?

<u>Certificate of completion</u>: Besides the experience gained within the programme, SCAT will issue a certificate at the end of the mobility grant, with the detail of the project carried out and the results obtained. This document could be used to justify the stay abroad and the research undertaken to the grant-holder's institution of origin.
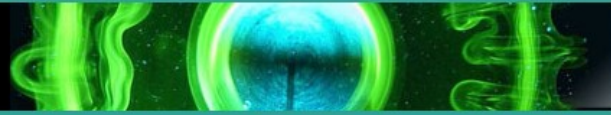
For further information, contact

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44 (0)117 331 1805
Mathematics, University of Bristol
Bristol BS81TW, United Kingdom

SCAT
SCIENTIFIC COMPUTING ADVANCED TRAINING

αLFA
EUROPEAID
CO-OPERATION OFFICE

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Image information | Next research image >>

Mobility Grants

- FAQs
- Applications

Scholarships Team

Lorena Barba
Agnes Maurel
Andre Nachbin
Carlos Perez-Segarra
Luis Salinas
Vladimir Tchijov

Contact Information

Project manager:
Mr. Boris Drappier
+44 117 331 1805
Dept. of Mathematics
University of Bristol

Contact us:
scat-alfa@bristol.ac.uk

Applications

Note: Please make sure that you are eligible, and that you have read the FAQs and the Guidelines for Applicants.

Personal Information

* **Last Name:**

* **First Name:**

Middle Initials:

Title: Mr

* **Nationality:**

* **Address:**

* **Zip code:**

* **City:**

* **Country:**

* **Email:**

* **Telephone:**

Fax:

Personal URL:

* **Home Institution:**
Department of Mathematics, University of Bristol, UK

* Hosting Institution:

Department of Mathematics, University of Bristol, UK ▾

Comments:

* Submission of Documents

Please submit any supporting documentation for your application. This should include at least a CV. If you have several documents please zip them into a single file before uploading.

[   ] Browse...

Please enter the names and addresses of two referees who may be contacted.

* Primary Reference:

* Secondary Reference:

* To the applicants : please tick the box to confirm that you have read the Guidelines for Applicants and the FAQs posted on the website, and that you accept the conditions of the programme.

☐

[Reset] [Send]

🔺 **back to top**

Minute of the Selection procedure for the Grant-holders selection

30 June 2006

Atendants:

- Luis Salinas*: Chairman
- Agnes Maurel*
- Vladimir Tchijov*
- Lorena Barba*
- Boris Drappier*
- Fernando Lund

- Felipe Barra
- Marcus Sarkis
- Duilio Tadeu
- Anne Bague
- Ian Stewart
- Oscar Orellana

* are members of the scholarship team

Preparation of the selection

5 candidates have been pre-selected. Their files were presented in separate folders, with all supporting documents. The 5 dossiers are handed over to the attendants for reading.

A check-list is attached to each folder, so as to facilitate the assessment of the candidate and to check his/her compliance with the requirements of the selection process.

General discussion

The exigency of TOEFL and/or IELTS and/or MELAB test is approved as standards for assessing command of the English language. It is agreed that a minimum score of 550/213 for TOEFL would be asked to be awarded the grant without further language requirement.

Discussion of the dossiers

During the process, each candidate is revised separately, in the following order:

1. **Felipe Cruz** (from USM-Valparaiso)

   Luis Salinas presents the applicant with a short description.

   He has a good math background and programming skills.

   Luis Salinas and Oscar Orellana would send the required reference letters for the applicant.

2. **Claudio Torres** (from USM-Valparaiso)

   Luis Salinas presents the applicant with a short description.

   The application file is weak, with poor supporting documents. Luis Salinas is not sure about the suitability of the applicant.

There is a suggestion that the applicant would be asked to apply again in the next round.

Lorena Barba adds that his command of the English language is poor.

3. **Helmut Wahanic** (from IMPA-Rio)

Marcus Sarkis presents this applicant.

The applicant is a good math student, with grades above the average.

His dossier is solid, and there is full agreement that he is a good applicant.

4. **Miguel Bustamante** (DFI-Santiago)

Felipe Barra presents this applicant. He is the only PhD applicant.

Miguel has a Math background and experience in Vortex Dynamics and programming.

Luis Salinas considers his cover letter a very good one, and he knows Miguel's mentor: Dr. Hojman.

Lorena Barba emphasises the strong motivation of the applicant, as well as a well described research project.

5. **Leonardo Gordillo** (DFI-Santiago)

Felipe Barra mentions that Leonardo has a degree from Universidad Catolica de Chile, which is not part of the network, and would therefore not be eligible.

David Emerson suggests that this application would be considered "conditional" and that the applicant apply again in next round. However, he must be told to check his eligibility issue first, and demonstrate a clear link with Universidad de Chile.

Outcomes of the selection process:

1. **Felipe Cruz** : Selected
2. **Claudio Torres** : Rejected, should apply again
3. **Helmut Wahanic** : Selected
4. **Miguel Bustamante** : Selected
5. **Leonardo Gordillo** : Rejected, should apply again

Further recommendations

Marcus Sarkis suggested that the tutors that would be receiving an awarded candidate would write a letter stating that they were willing to accept the applicant to work with them.

Lorena Barba evinced her willingness to receive the applicants from USM and from IMPA at the university of Bristol.

David Emerson suggested that the dossiers of the applicants would be revised beforehand by the coordination office so that the eligibility and basic requirements of the applicant are screened and established. It is agreed that such a pre-screening would ease the selection process in case many applicants were revised in a single session.

Luis Salinas, chairman
Wuerzburg, 17 July 2006

University of BRISTOL

This project is co-financed
by the European Union.

Minute of the Selection procedure for the SCAT Grant-holders

26 September 2006

Atendants:

- Andre Nachbin*: Chairman
  - Agnès Maurel*
  - Lorena Barba*
  - Boris Drappier*
  - David Emerson
  - Manel Soria
  - Stéphane Le Dizès

- Joël Frelat
- Maurice Rossi
- Christophe Josserand
- Xiaojun Gu
- Ismael Herrera
- Jorge Zubelli
- Susana Gómez

  * are members of the scholarship team

Preparation of the selection

Two candidates have been pre-selected. Their files were presented in separate folders, with their supporting documents. The 2 dossiers are handed over to the attendants for reading.

All files have been pre-scanned and the eligibility of all the applicants has been verified according to the criteria detailed in the application procedure (document ApplicationProcedure_en_v1-4.pdf)

Only eligible applicants are presented to the committee. A check-list is attached to each folder, so as to facilitate the assessment of the candidate and to check his/her compliance with the requirements of the selection process.

General discussion

⇨ Revision of the selection process held at Daresbury on 30-06-2006 is made.

⇨ COMMENTS by members of SCAT:

Manel Soria: the command of the English language required by the scholarship might prevent many people to apply (even himself!) and he asks to lower that requirement. He also pointed out that SCAT should clearly request certain items to be clearly stated by the applicant in his/her CV. For example date of birth, courses taken, detailed work experience among others.

Lorena Barba justifies this requirement regarding the SCAT proposal submitted to the EC in November 2005; it was part of the requirement biding by SCAT. Furthermore, English is the only language accepted in the SCAT project, as far as the EC is concerned. Hence an English exam is required under all conditions.

⇨   Susana Gómez asks what the English level of the other applicant is.

Boris Drappier: they are all above the minimum prerequisite.

⇨   General revision of Leonardo Gordillo's selection (grant-holder selected in Daresbury in June and put on hold for his eligibility): no observations about it.

Discussion of the dossiers

During the process, each candidate is revised separately, in the following order:

1.   **Iván Contreras** (from UNAM-Mexico)

Ismael Herrera presents the applicant with a short description.

Christophe Josserand would like to know more about the background of Ivan (age, main studies orientation, etc).

Ismael Herrera reads his CV. Questions arise regarding the gap of the applicant in the years 2001-2006.

Agnès Maurel asks about his main motivations: she is him an applied profile?

Christophe Josserand would prefer a more numerical profile, so as to work with Stéphane Zaleski. What are his programming skills? There is no clear answer to those questions.

Susana Gómez points at the mutual benefit that both the institution and the student may find in a joint collaboration, in particular on further developing the students scientific computing skills.

Jorge Zubelli, comments based on his experience in other ALFA projects: underlines that even when things are not clear at the beginning, mutual benefit generally is found during the scholarship.

Andre Nachbin, regarding comments that a Latin-American student does not have experience to know what is been done within the SCAT European team: This is nonsense! It is the local Latin-American tutor's responsibility (at the institution of origin) to drive the applicant and help him finding a suitable host institution.

2.   **Ana Lilia González** (from UNAM-Mexico)

Susana Gómez briefly introduces her applicant. Reported on actuarial science background, which in Mexico is one of the few venues for Applied Mathematics inclined students. The student took a course with Susana in Numerical Linear Algebra and Optimization with a project and a masters thesis that had an emphasis on parallel computing. In particular on a Poisson Equation problem.

Manel Soria (host institution chosen by the applicant) would like to have a clearer project before accepting the applicant.

Susana Gómez presents the Daresbury lab as another possible host for this applicant. David Emerson approves.

Outcomes of the selection process:

1. **Iván Contreras** : Not approved. Should apply again with a stronger case, insisting in the project from the institution of origin and with the help of the host tutor.
2. **Ana Lilia González**: Selected, with the condition of finding a host institution prepared to back her research project (this should be documented afterwards).

Further recommendations

Manel Soria highlights the necessity of institutions to better attract students (with good project proposal broadcast on the website for instance)

Andre Nachbin, chairman

Rio, 20 October 2006

Minute of the Selection procedure for the SCAT Grant-holders

06 January 2007 - Valparaiso

Atendants:

- Luis Salinas *: Chairman
- Lorena Barba*
- Boris Drappier*
- Andre Nachbin *
- Oscar Orellana
- Alberto Verga

- Pierre-Yves Lagrée
- Felipe Barra
- Patricio Cordero
- Mike Ashworth
- David Emerson
- Marcus Sarkis

* are members of the scholarship team

Preparation of the selection

Three candidates have been pre-selected. Their files were presented in separate folders, with their supporting documents. The folders include at least their CV, their online application, evidence of the knowledge of the English language, their reference letters (or referee forms if they don't have original letters yet) the abstract of their research project, and their personal statement. The 3 dossiers are handed over to the attendants for reading.

All files have been pre-scanned and the eligibility of all the applicants has been verified according to the criteria detailed in the application procedure (document ApplicationProcedure_en_v1-6.pdf and Selection_CheckList_en_v3.pdf)

Only eligible applicants are presented to the committee. A check-list is attached to each folder, enabling a quick overview of the eligibility of the applicant.

Introduction

Lorena Barba summarizes the mobility situation: so far, 5 grantees have been selected, standing for 25% of our global target. Out of the 5 grant holders, 4 come from 4 institutions in L.A., and the fifth comes from the EU.

She stresses that it is important for the success of the project that all institution make their contribution to the mobilities.

The Guidelines are reviewed for acknowledgement of all attendants.

University of BRISTOL

by the European Union.

Discussion of the dossiers

During the process, each candidate is revised separately, in the following order:

1. **Claudio Torres** (from USM-Valparaiso)

   Oscar Orellana presents the applicant with a short description.

   Claudio is a Civil Engineer (2004); he is undertaking a Master degree in Informatics, and works currently on singular vortex sheet modelling.

   The applicant is hard working and has submitted a good research project. He possesses strong programming capabilities and is already initiated in CFD.

   Luis Salinas insists that Claudio is a very good student (he's been selected in the List of Honour of USM). His command of English is fair, and he will take the TOEFL test in early March (this has been paid already!)

   He is interested in working at Bristol, which could be part of his MSc.

2. **Guillermo Oyarzún** (from USM-Valparaiso)

   Luis Salinas introduces the applicant, who seems very similar to the previous one.

   Guillermo is also a Civil Engineer, starting an MSc in Informatics.

   He has strong programming skills, and he wants to develop an algorithm for use in cluster.

   His Mathematical background is strong, with a three year course, which he has complimented with a 6 months training in Scientific Computing.

Both applicants are very similar and would be ready to start in March 2007 at Bristol.

Mike Ashworth asks Luis Salinas which student he'd choose: Claudio Torres is the answer, because his MSc is closer to completion.

Boris Drappier underlines that this is the second application of Claudio Torres, who has improved his application (he has taken an English course and has submitted more information). Luis Salinas says that his opinion of Claudio has changed recently, for the better.

Alberto Verga suggests that Guillermo changed his research topic -which is very similar to the one presented by Claudio- that he found another institution and that he applied again.

3. **Luis de la Cruz** (from UNAM-Mexico)

   David Emerson introduces the applicant (his home tutor, Vladimir Tchijov, is missing that day).

   The applicant is already a PhD in computational science, specialised in turbulent flows. He seems to have good skills and his research project is of much interest to the Daresbury Lab, in particular applying his methods on mixing. David Emerson would be happy to receive him at Daresbury.

   Furthermore, Vladimir Tchijov has spoken well of Luis, and the paperwork he has submitted is comprehensive.

Outcomes of the selection process:

1. **Claudio Torres** : Selected. Will start his mobility in March 2007. at Bristol under the supervision of Lorena Barba.

2. **Guillermo Oyarzún**: Selected, with the condition of finding a new host institution and submit a new research project suitable to it.

3. **Luis de la Cruz** : Selected. Will start his mobility asap. at Daresbury, under the supervision of David Emerson.

Further recommendations

A suggestion is made to change the last deadline of applications so as to match the meeting of Mexico (Nov '07). This way, applications could be revised during the meeting and mobilities could be granted in due time for completion before the end of the project, in late 2008.

Luis Salinas, chairman

Valparaiso, 06 January 2007

Selection of SCAT Grant-holders
Fast Track procedure
November 2006

Applicant: Thomas Séon

    Institution of origin and tutor   : LMM - Christophe Josserand

    Host Institution and supervisor : DFI UChile - Felipe Barra

Scholarship committee:

- Andre Nachbin*: Chairman
- Agnès Maurel
- Boris Drappier
- Carlos Pérez-Segarra

- Lorena Barba
- Luis Salinas
- Vladimir Tchijov

    * Appointed Chairman in the selection procedure held in Paris, September 2006

Rationale for a Fast Track procedure

There are two main reasons for such a procedure to be set up:

1. **Lack of EU applicants:** SCAT must comply with the 4 EU student forecast in the budget, and the recruitment of European grant holders has proven to be difficult.

2. **SCAT Meeting in Paris:** The applicant was introduced by his tutor to 4 people at the same time, this including the interlocutor of the host institution, and 3 members of the Scholarship Team.

Selection procedure

⇨ The same criteria used in the former selection processes have been applied, and all the requirement of the application procedure have been complied with (as set up in the document "ApplicationProcedure_en_v1-5.pdf")

⇨ Comments are being received during 15 calendar days after the submission of the file (only strong arguments against the application or the procedure itself might be taken into account).

No comments have been received so far.

Outcomes of the selection process:

The applicant is: Selected – Not selected.

Andre Nachbin - Chairman
Rio, 21 November 2006

University of
BRISTOL

This project is co-financed
by the European Union.

SCAT
SCIENTIFIC COMPUTING ADVANCED TRAINING

Check List - SCAT project mobility grants

Applicant: ....

Please check whether the applicant complies with the following requirements:

Eligibility

- ☐ Is a registered student at one institution;
- ☐ Is an appointed post-doctoral researcher at the institution;
- ☐ Is a graduate (MSc, PhD) from the institution..

Pre-requisites to be included within the application:

- ☐ Application received in due time
- ☐ Application in English, showing sufficient knowledge of the language
- ☐ Bachelor of Science or equivalent in mathematics, physics or engineering
- ☐ Two referee forms duly signed by the applicant;
- ☐ Strong mathematical background
- ☐ Previous experience in research and/or publications-contributions;
- ☐ Computer programming skills;

Supporting documents

- ☐ Curriculum Vitae;
- ☐ Evidence of previous related experience and research training
- ☐ Evidence of knowledge of the English language supported with either:
    - ☐ TOEFL, IELTS, MELAB… (other test…);
    - ☐ document confirming your registration, with date of examination;
    - ☐ proven evidence (degree in English, stay in an English speaking country, publications in English etc…);

- ☐ Two reference letters in original (as mentioned in the referee form);
- ☐ Abstract of the proposed project, and why you chose the host institution;

- ☐ Personal Statement (1 page max.) including at least:
    - ☐ detail of the degrees obtained by the applicant and his/her projects;
    - ☐ personal motivation of the applicant explaining his choices;
    - ☐ description of previous research projects, papers, contribution etc;
    - ☐ name of two SCAT members: one tutor and one supervisor;
    - ☐ statement evidencing the knowledge of the English language.

University of BRISTOL

This project is co-financed by the European Union

General Recommendations regarding the registration of grant-holders

Tutor might refer to the ALFA "Page of Signature" they have signed when joining the programme. The major responsibilities of tutors for grant-holders are pointed out there.

Grant holders have approved the "Guidelines for Applicants" posted on the SCAT webpage and accept its terms and conditions.

Appointment of the grant-holders

Once the selection procedure is completed (according to the Guidelines), all documents that were pending at the selection stage must reach the coordination office in Bristol.

Obligations of the Grant-Holder

The Grant-Holder is responsible for:

I.   Signs and sends the ResponsibilitesGrantHolders_en document to the SCAT office in Bristol, to ensure his/her commitment with SCAT mobility grant.

II.   Booking and **buying his/her airfare** as well as **visa** for the approved dates (although visa and/or passport expenditures are not reimbursed under the SCAT provisions, and must therefore be born by the grant-holder). Date of the travel must correspond to the approved dates of the project. However, the ticket must be open to one year, be fully refundable, and allow for changes of dates in case of modification of the length of the research project.

III.   Getting full **medical and travel insurance** before the commencement of the mobility, and for the whole length of the stay visa (one year is recommended).

IV.   Caring for his/her **accommodation** in the host city.

Tasks of the Tutor (Institution of origin)

Broadly speaking, the tutor would be responsible for providing assistance in all aspects in which the grant-holder would face difficulties. In particular, he/she would ensure that the grant-holder:

I.   Buys his/her **airfare** in due time, and gets his/her visa for the required period.

II.   The tutor will ensure that the grant-holder gets due support from his/her institution of origin for attending the **SCAT fellowship and that this would be recognised afterwards** by the institution's authorities as a valid course.

Prepared by Boris Drappier, Project Manager – SCAT

University of BRISTOL

Tasks of the Supervisor (Host Institution)

The host supervisor must take special care in doing what follows:

I.   Send an **invitation to the grant-holder** accepting him/her as a SCAT fellow, and stating at least the following: full name of the grant-holder, date of birth, dates of minimum stay allowed by the award and amount of the funding, details of the ALFA contract and the funding authority, and responsible person at the host institution (see template provided by the UOB for details called *UOB-Invitation*).

II.   Provide for **desk and PC** for the all stay of the grant-holder, as well as access to communications and any available services.

III. Enrol the student as a **registered fellow of your institution** (with a fee waiver), granting him/her full use of the facilities, libraries etc.

IV.   Facilitate access to a **language course**, should the need arise.

V.   Ensure that the monthly stipend could be paid directly to the Grant-holder. Can he/she open a bank account? Or should the payment be sent by cheque to the Grant-holder, who will cash it in a bank? For the first month, it is expected that the grant holder could be **paid in cash** to ensure he/she can have money to settle down properly when arriving at the host institution.

For further information, please contact

Boris Drappier   SCAT Scientific Computing Advanced Training

boris.drappier@bristol.ac.uk
44+(0)117 33 11 805
Mathematics, University of Bristol
Bristol BS81TW, United Kingdom

Prepared by Boris Drappier, Project Manager – SCAT

Responsibilities of Grant Holders

SCAT Project Mobility Grants

<u>Availability of the Grant-Holder</u>:

By submitting the application, the applicant undertakes to accept the grant if his/her application is successful. This entails willingness to travel abroad and availability for the whole length of the scholarship, with a full time dedicated stay at the host institution.

<u>Administration requirements</u>:

The grant-holder is asked to ensure his/her registration at the host institution, the completion of the language improvement (when required), and to comply with all required steps in the host country (customs, visa and passport, etc).

The grant-holder is also asked to buy a full health insurance adapted to the country of the host institution (if applicable). Those administrative costs would eventually be met by the SCAT mobility scheme, but please consult with the co-ordination office for applicable conditions.

<u>Stipend payments</u>:

Monthly stipends of €1500 will be paid to the grantee for the duration of his/her mobility. The grantee will be responsible for sending the co-ordination office a request for payment/declaration, duly signed and in ample time for the processing of the monthly stipend.

<u>Travels</u>:

The successful applicant will be required to make all necessary arrangements for his/her mobility (i.e. travel arrangements and booking –including cancellation insurance with full refundable airfare-, accommodation, subsistence, etc). He/she will have support from the SCAT members, as needed.

The main ticket should have the following conditions:

- Must be valid for one year
- Must be a direct route from your institution of origin to your host institution.
- Must be an economy ticket (tourist class)
- Must be changeable (in case the grant holder must changes dates of departure/return)
- Must be a return ticket for the length of stay according to the scholarship granted (but within a minimum of 6 month and a maximum one year)
- Must have cancellation possibility (hence being refundable in case the grant holder cannot travel, for any reason)

- Since the scholarship is paid on a monthly basis, the actual stay of the grant holder must be an entire number of months

Furthermore, the grant holder must:

- have signed this declaration of conformity "ResponsibilitesGrantHolders_en"
- have a valid VISA for the host country, valid for at least 6 month after the end of the planned stay.
- Have a full insurance coverage (for loss of baggage + medical insurance)

The reimbursement is made according to the actual price paid by the traveller, against invoice, ticket or receipt. The maximum amount paid is 1.500 EUR (or its equivalent in foreign currency when exchanged at the official rate of the ALFA programme). Any amount above the mentioned limit won't be reimbursed.

VISA costs are not included. The grant holder must arrange his/her own VISA

The grant holder will receive his/her reimbursement when:

- He/she fill in the form corresponding to the currency claimed (detailing every single expense, mentioning the currency, the exchange rate, and the detailed requested in the form). Please contact the Project Manager for more information regarding this matter.
- He/she provides all supporting documents in original (invoices, tickets, receipts, etc) for every single expense
- He/she accompany the claim with boarding passes justifying that he/she has taken the plane that is shown on the supporting documents.

Please beware that without those documents in original, no payment will be issued!

Acknowledgements:

The grant-holder must acknowledge the SCAT project and the ALFA Programme of EuropeAid in any publications derived from the research carried out during the mobility grant.

General provisions:

The SCAT mobility scheme will under no circumstances be responsible or liable for any loss, damage, injury, sickness, disease, death, delay, expense, or inconvenience caused to or by the grant-holder or any third party, resulting directly or indirectly from any act, negligence, default or omission of any kind.

Furthermore, the SCAT mobility scheme has the right to put an end to the scholarship at any moment, under justified circumstances or by decision of the majority of the members of the SCAT Scholarship Team.

What you will get at the end?

<u>Certificate of completion</u>: Besides the experience gained within the programme, SCAT will issue a certificate at the end of the mobility grant, with the details of the project carried out and the results obtained. This document could be used to justify the stay abroad and the research undertaken to the grant-holder's institution of origin.

By signing acceptance of the grant, you agree to these terms and your responsibilities:

_____

Grantee signature, date

For further information, contact

Boris Drappier

boris.drappier@bristol.ac.uk
44+(0)117 331 1805
Mathematics, University of Bristol
Bristol BS81TW, United Kingdom

Grant-Holders Selection procedure

NAME   :
Tutor origin :
Tutor host   :

Duration   :
Travel dates :
Co-fin arranged :

NOTES   :

1. Application

☐   Apply online : http://www.scat.bris.ac.uk/mobility_grants/applications/
☐   See file submission check list in: "ApplicationProcedure_en_v1-6.pdf"
☐   Send "Acknowledgement of Application" to the applicant.

2. Selection

Could be done either by a selection committee (in a meeting with a President and members of the Scholarship Team), or with fast track procedure (in case the requirement is urgent for any reason).

☐   Check documents against "Selection_CheckList_en_v3.pdf"
☐   Write the minutes of the selection procedure
☐   Send approval/refusal letters to all applicants

3. Preparation

☐   Get Visa and buy airfare
☐   Get full travel and medical insurance
☐   Copy of Passport
☐   Original of student certificate
☐   English test scores

4. Mobility

☐   Send "RegistrationProcedure_en_v1-3.pdf" to tutor, supervisor and to the grant holder.
☐   Ask document signed : "ResponsibilitesGrantHolders_en_v3.pdf"
☐   Host Tutor sends an invitation "UOB Invitation Template"
☐   Enrol the student at the host institution
☐   Ask for a short Bio with pictures of the grant- holder
☐   Prepare 1st payment and following ones
☐   Enrol into Backboard
☐   Language course

Grant-Holders Selection procedure

NAME　　　　:
Tutor origin　　:
Tutor host　　:

Duration　　　:
Travel dates　:
Co-fin arranged :

NOTES　　　:

1. Application

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☐　　　See file submission check list in: "ApplicationProcedure_en_v1-6.pdf"
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☐　　　Enrol into Backboard
☐　　　Language course

The SCAT Experience

It is difficult to resume in few words all the details of my visit to Bristol.

The Project has been very interesting not only in the academical and professional, but also in the personal sense. As my studies have been mainly in Pure Mathematics, it has been a challenge for me to get involved in Practical Computation; nevertheless I made it! It was like a huge adventure game: sometimes I felt I was going backwards and everything was lost... suddenly the storm opened a little bit and a tiny beam of light went through; then I was rushing again sailing with all thrust!

Once, I was searching for MATLAB's specifications for performing the FFT2 algorithm. Consequently, I wrote an e-mail to Lloyd N. Trefethen, at Oxford. His answer was:
"I can't answer this right now, but I will send your question to my graduate students."
Some days later I received a reply from a colleague of my undergraduate studies, who is, by the way, working with Prof. Trefethen! We immediately arranged my trip to Oxford.

I remember specially the big trouble we had trying to figure out why the simulation of the tripole was running so slow. We knew WHAT would solve the problem, but didn't knew WHY this wasn't working! After several trials for revealing the mystery, I sat down on my desk and told myself:
"It's now or never!"
One hour later I found the final solution and went running to Lorena's office (it was about 9 p.m. already).

I owe special gratitude to my supervisor at Bristol, Lorena Barba, to André Nachbin, my supervisor at IMPA, and to Boris Drappier, the SCAT Project's Manager. Thanks to Ashley Willis for his help with Spectral Methods Programming.

Helmut Wahanik
Bristol-UK
March 2007

SCAT

SCIENTIFIC COMPUTING ADVANCED TRAINING

Certificate of Completion

Latin America–Europe Mobility Grant

Awarded to : *Helmut Wahanik Duran*

Host Institution: *University of Bristol, United Kingdom*

Home Institution: *Instituto Nacional de Matemática Pura e Aplicada (IMPA), Brazil*

Project Title: *Spectral Method for the Vortex Tripole*

Dr Lorena Barba, SCAT project coordinator

Bristol, on the 6 of March 2007

University of
BRISTOL

Appendix B

Documentation for International Meetings and Courses

Kick-off meeting in Barcelona – Program
20-24 February 2006

Monday	9:30 AM – Welcome, chatting around and meeting each other. Registration. Coffee. 11:30 Presentation about the ALFA programme, and about our project, details of actions and calendar and budget (L.Barba) 12:30 break Question & Answer session. 1:30 – 2:30 Lunch. 2:30 - **Session 1 on "Enabling Technology"** Presentation by Ian Stewart (Bristol) on the HPC programme in Bristol, and descriptions of the current HPC technologies. Presentation of Daresbury Labs (Dr. David Emerson, Dr. Mike Ashworth) about DL, HPCx and projects carried out in the Computational Science Dept.
Tuesday	9:30 AM – noon : *Field visit to BSC* 12:00 – Travel back to UPC. 1:30 – 2:30 Lunch. 2:30 – 4:00 PM – **Speed Dating session** Short personal interviews, allowing every participant to get known to each one of the members. 4:00 – 4:30 coffee break 4:30 – 6:00pm **Session 2** - **ESPCI** Paris (Dr. Eduardo Wesfreid & Dr. Agnès Maurel)
Wednesday	9:45 AM – **Session 3** - **LMM** Paris (Dr. Christophe Josserand & Dr. Joël Frelat) 11:15 – 12:00 coffee break 12:00 – 1:30pm **Session 4** - **USM** Valparaiso (Dr. Oscar Orellana & Dr. Luis Salinas) 1:30 – 2:30 Lunch. 2:30 – 4:00 PM – **Session 5** - **UOB** Bristol (Dr. Lorena Barba & Dr. Ian Stewart) 4:00 – 4:30 coffee break 4:30 – 6:00pm **Session 6** - **IRPHE** Marseille (Dr. Alberto Verga & Dr. Malek Abid) Evening – Dinner.
Thursday	9:45 AM – **Session 7** - **UPC** (Dr. Carlos Pérez-Segarra & Dr. Assensi Oliva) 11:15 – 12:00 coffee break 12:00 – 1:30pm **Session 8** – **IMPA** Rio (Dr. Andre Nachbin & Dr. Jorge Zubelli) 1:30 – 2:30 Lunch. Afternoon – Free for a tourist activity, or some leisure activity
Friday	9:45 AM – **Session 9** – **DFI** Santiago (Dr. Sergio Rica) 11:15 – 12:00 coffee break 12:00 – 1:30pm **Session 10** – **IIMAS** Mexico (Dr. Susana Gomez) 1:30 – 2:30 Lunch. 2:30 PM – Wrap-up, including formation of Teams: Scholarship Team, Science topics Team, Technology Team. Plans for the future, calendar, etc. 3:30 PM finish.

Visit:

There will be a field visit on Tuesday morning to the Barcelona Supercomputing Centre, BSC (http://www.bsc.es/).

The main resource at BSC is *MareNostrum*, which is the fastest supercomputer in Europe and the 8th in the world, according to the Top500 list of November 2005. Apart from research in the technology (computer architecture, etc.), the main activity of the BSC is research in life sciences and earth sciences. In this last topic, research projects include modelling of climatic change, the prediction of air quality and concentration of photochemical pollutants, and more. Life science research includes genome analysis, prediction of protein folding, biological systems, among others.

We will learn about the technology (IBM Power PC, BladeCenter architecture and Myrinet), how the centre works, what types of research projects are carried out, and about the project of building the fastest computer in Europe. If you look at the pictures on the website, you will see that this promises to be a fascinating visit.

Sessions:

The above programme includes 5 "Sessions" of ½ day each. These are allocated to the partner institution presentations. Each session can have a sub-section of 1.5 hours each, separated by a coffee break.

We have **10 sub-sections (1.5hr)**, which we can allocate **one to each institution.**

Presentations:

Part 1 (½ hr) – General presentation about the institution
> Where is it located? (maps and pictures desirable!)
> How many students (if applicable)? Staff?
> Anecdotes, a bit of history, maybe.
> What types of teaching and research activities are carried out?
> Main research areas of the specific department or laboratory represented in the network.

Part 2 (1 hr) – Science presentations.
> Specific research interests of the network participants, with examples of recent projects, publications, PhD supervisions, etc.
> What topics do the participants think that they have in common with other partners.
> Examples of research projects that could be offered to grant-holders in joint supervision (either post-graduate students or post-docs, with durations of between 6 and 10 months).

> If applicable, we would like the participants to address the following questions:
> (in particular the partners from Latinamerica, but also others, except perhaps DL!)

> o   How can scientific computing help in the objectives of our research programmes?
> o   What are we lacking in terms of scientific computing capability? (computer resources, skilled human resources, access to software, libraries, etc.)
> o   What perspective is there for Computational Science in out institution/country?

| Home | About Us | Research | Mobility Grants | Online Learning | Meetings & Events | News |

Image information | Next research image >>
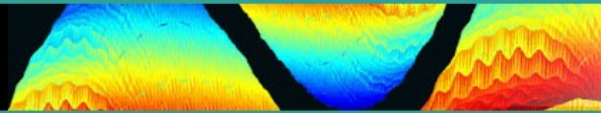
Search Website [Search]

News

◉ Articles & Archive year 1

Contact Information

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Dept. of Mathematics
University of Bristol

Contact us:
scat-alfa@bristol.ac.uk

SCAT project launch at Technical University of Catalunya

February 2006

Barcelona— During the week starting on 20 Feb. 2006, the Scientific Computing Advanced Training (SCAT) project was launched at the Terrassa Campus of Technical University of Catalunya. The meeting was hosted by the Polytechnic School of Industrial and Aeronautical Engineering, and organized by the local SCAT members at the Technological Centre for Heat and Mass Transfer, and the SCAT co-ordination personnel.

SCAT members at UPC
for the project kick-off

Representatives from all the 10 partner institutions of SCAT were present, and gave a series of scientific talks. The subjects spanned the wide spectrum of interests of the network, including:

- **Computational fluid dynamics**
- **Elasticity, granular materials, microfluidics**
- **Multiphase flows, and related numerical methods**
- **Combustion, turbulence, interfaces**
- **Statistical physics, nonlinear phenomena**
- **Nonequilibrium systems, superfluid models**
- **Fluid dynamics and wave theory**
- **Environmental modelling**
- **Inverse problems in biophysical sciences**
- **Heat transfer, thermodynamics and physical chemistry**
- **Optimization methods**
- **Mathematical modelling of Earth systems**
- **Wavelet analysis and images**

In addition, the group made an official visit to Barcelona Supercomputing Centre, where they were offered talks describing *MareNostrum*, the fastest computer in Europe and 8th in the world by November 2005, and toured the facilities. *MareNostrum* is breathtakingly housed in an old chapel of Girona Tower, in Barcelona.

Download or view a movie clip introducing some SCAT members:
A humorous introduction of some of the participants to the SCAT launch, with the soundtrack of the tango "Cambalache" (1.2 MB).

Appearances in the Press

- **Press Release in HTML (in Catalan)**

Press Release (Catalan):
Prepared by the Technical University of Catalunya Press Office, in Calatan.

Interview in local press (Spanish):
Dr. Lorena Barba, SCAT co-ordinator, was interviewed for the local press during the project launch.

Full color announcement in "Perfiles" (Spanish):
Perfiles is the information bulletin of the Technical School of Industrial and Aeronautical Engineering of Terrassa.

◔ **back to top**

University of BRISTOL

Universidad Santa María (USM)

- Fluid dynamics and Aerodynamics
  - Vortex sheet dynamics
  - Flows with surface tension
  - Lifting line theory, extended for shaped wings
- Elasticity
- Wavelet analysis and images
  - Image registration based on wavelet analysis
  - Representation of electroencephalographic signals
- Scientific computing and function theory
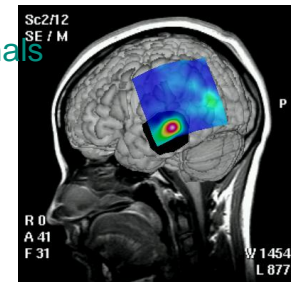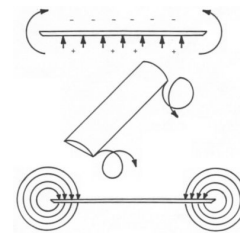
People: Oscar Orellana, Luis Salinas.

Slide 1

SCAT — SCIENTIFIC COMPUTING ADVANCED TRAINING

What is Scientific Computing?

- Solution of scientific problems using computers
  - It is a multidisciplinary activity ↻
  - "third pillar of science"
    - Next to experiments and analysis
  - Now a necessary avenue for enquiry in almost all fields of science and engineering /

applied mathematics

computer science(*)

Physics, chemistry, bio-sciences, etc. + engineering

(*) meaning, software development, implementation, execution, profiling, optimizing…

Slide 2

SCAT — SCIENTIFIC COMPUTING ADVANCED TRAINING

SCAT partners

- Multidisciplinary team
  - DL
  - ESPCI
  - LMM
  - UoB
  - IRPHE
  - UPC
  - DFI-UCh
  - IMPA
  - UNAM
  - USM

applied mathematics

computer science

UoB
USM
IMPA
LMM
DL
UNAM
UPC
IRPHE
DFI-UCh
ESPCI

Physics, chemistry… + engineering

Slide 3

SCAT — SCIENTIFIC COMPUTING ADVANCED TRAINING

Daresbury Laboratory (DL)

- Computational engineering
  - Turbulence and combustion, aerodynamics, environmental modelling
- Fluid dynamics
  - Free-surface and interfacial flows
  - Microfluidics
  - Rarefied gas dynamics
- High-performance computing
  - DisCo: giving academic groups unbiased advice, helping to understand tools, machines, performance
  - Software engineering: portability, grid computing

Simulation of a micro-vortex reactor for the Paterson Institute for Cancer Research

People: Mike Ashworth, Rob Barber, Miles Deegan, David Emerson, Xiaojun Gu, Christine Kitchen, Andy Sunderland.

Slide 4

SCAT — SCIENTIFIC COMPUTING ADVANCED TRAINING

École Supérieure de Physique et Chimie Industrielles (ESPCI)

- Granular materials
  - Underwater sand ripples
- Elasticity
  - Propagation of elastic waves through dislocations
  - Propagation of Lamb waves in inhomogeneous waveguides
- Fluid dynamics
  - Flow control, bluff body wakes, passive scalar turbulence, structure and dynamics of vortex filaments
  - Temporal evolution of a vortex burst, turbulent cascade build-up

People: Agnes Maurel, Eduardo Wesfreid.

Slide 5

SCAT — SCIENTIFIC COMPUTING ADVANCED TRAINING

Laboratoire de Modélisation en Mécanique (LMM)

- Solid mechanics
  - Cracks and fracture
- Fluid mechanics
  - Turbulence, vortex flows, multiphase flows, free surfaces
- Granular systems
- Bose-Einstein condensates
- Numerical methods
  - Large-eddy simulation (sub-grid models)
  - Volume-of-fluid
  - Boundary-integral

People: Joel Frelat, Christophe Josserand, Pierre-Yves Lagre, Maurice Rossi.

Slide 6

SCAT — SCIENTIFIC COMPUTING ADVANCED TRAINING

University of Bristol (UoB)

- Fluid dynamics
  - Vortex interactions and stability, mixing, vortex multipoles
  - Flow simulation using vortex methods
  - Free-surface flows, nonlinear dynamics and singularities, turbulent flow at very high Reynolds numbers
- High performance computing
  - Parallel programming techniques, Message Passing Interface, grid computing, graphics and visualization, profiling

People: Lorena Barba, Jens Eggers, Ian Stewart.

ALFA-SCAT
Scientific Computing and Advanced Training

First SCAT European Workshop
Daresbury Laboratory
June 26-30 2006

Draft Programme of Activities

Monday 26 June			
Time	Title	Speaker	Affiliation
09:30 – 10:10	Registration		
10:10 – 10:50	Introduction	Lorena Barba	Bristol
Coffee			
11:20 – 12:00	TBD	Stef Salvini	Allinea
12:00 – 12:40	TBD	Stef Salvini	Allinea
Lunch			
14:20 – 15:00	Podcasting solutions in education	Alan Greenwell	Apple
15:00 – 15:40	e-learning		Apple
Coffee			
16:10 – 16:50	Case study	Bill Ashraf	University of Bradford
16:50 – 17:30	MAC for Science: from data analysis to publication, seamlessly	Massimo Marino	Apple

Tuesday 27 June				
Time	Title		Speaker	Affiliation
09:30 – 10:10	Domain Decomposition for Control Problems: Time and Space paralellizations		Marcus Sarkis	Instituto Nacional de Matemática Pura e Aplicada, Brazil
10:10 – 10:50	Numerical resolution of complex flows using the open source codes SURFER and Gerris (co-authors: Christophe Josserand, Stéphane Popinet)		Stephane Zaleski	LMM, Université Pierre et Marie Curie
Coffee				
11:20 – 12:00	Parallel Rotor Simulation Tools		Chris Allen	Bristol
12:00 – 12:40	Forward and inverse problems for the models of diffusion/advection of pollutants in the Mexico City region		Vladimir Tchijov	Universidad de Chile, Depto. de Física
Lunch				
14:20 – 15:00	Parallel computing		David Emerson Mike Ashworth*	Daresbury Laboratory
	Introduction	Advanced*		
15:00 – 15:40	Message passing	Performance tools*	Andy Sunderland Mike Ashworth*	
Coffee				
16:10 – 16:50	PetSc via Access Grid		Barry Smith	Argonne
16:50 – 17:30	PetSc via access grid			

Wednesday 28 June			
Time	Title	Speaker	Affiliation
09:30 – 10:10	Distributed Computing (DisCo)	Christine Kitchen	Daresbury Laboratory
10:10 – 10:50	Cluster computing	Christine Kitchen	Daresbury Laboratory
Coffee			
11:20 – 12:00	Mechanical instabilities in Lennard-Jones solids	Fernando Lund	Universidad Nacional Autónoma de México
12:00 – 12:40	Computational challenges of simulation using particles	Lorena Barba	Bristol
Lunch			
14:20 – 15:00	Developing a Computer cluster for CFD at the Informatics and Physics Departments at the UTFSM (co-authors: G. Hernández)	Luis A. Salinas-Carrasco, O. Orellana	Universidad Tecnica Federico Santa Maria
15:00 – 15:40	TBD		
Coffee			
16:10 – 16:50	PetSc via access grid#	Barry Smith	Argonne
16:50 – 17:30	PetSc via access grid#		

reserved in case of problems on Tuesday or if more advanced topics can be discussed.

Thursday 29 June			
Time	Title	Speaker	Affiliation
09:30 – 10:10	Introduction to the lattice Boltzmann method and some applications	Yonghao Zhang	Daresbury Laboratory
10:10 – 10:50	TBD	Duilio Tadeu	Instituto Nacional de Matemática Pura e Aplicada, Brazil
Coffee			
11:20 – 12:00	TBD		
12:00 – 12:40	TBD		
Afternoon free			

Friday 30 June			
Time	Title	Speaker	Affiliation
09:30 – 10:10	HPCx tour	Steve Andrews	Daresbury Laboratory
10:10 – 10:50	SCAT scholarships	Lorena Barba	Bristol
11:20 – 12:00	SCAT short courses	Lorena Barba	Bristol
Lunch			
13:40 – 14:20	TBD	Vadim Roussin	Intel
14:20 – 15:00	TBD	Vadim Roussin	Intel
Close of meeting			

SCAT
SCIENTIFIC COMPUTING ADVANCED TRAINING

Image information | Next research image >>

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Meetings and Events

- Listing of Events
- Registration

Related Information

Online Learning
Mobility Grants

Links

Daresbury Lab., CSE Dept.
Daresbury Village info
Forest Hills Hotel
Lamburns Restaurant

Industrial Sponsors

Allinea Software
Apple Science
Intel Software

First European SCAT Workshop
Daresbury Laboratory, 26-30 June 2006.

- Skip to:
  - **Conference Thematic Focus**
  - **Location**
  - **Programme**
  - **Fees**

Daresbury Laboratory

Daresbury Laboratory is one of three UK research labs, owned and operated by the Council for the Central Laboratory of the Research Councils (CCLRC). The three laboratories —Rutherford and Chilbolton are the other two— exist to support the research community by providing access to advanced facilities and an extensive scientific and technical expertise. CCLRC operates very large scale scientific facilities, which would be beyond what any one university could have access to. It is one of Europe's largest multidisciplinary research units, with 1750 staff supporting over 10 thousand scientists in university research groups.

Daresbury hosts SRS, the Synchrotron Radiation Source, a large mix of experimental facilities which deliver radiation with wavelengths extending from the infrared to hard X-rays. It is also the house of HPCx, the National High Performance Computing Service, a 12Tflop/s peak IBM p690+ cluster.

Daresbury Laboratory lies in the green and pleasant countryside of Cheshire, about a 40-minute drive west from Manchester, not far from the Welsh border. The claim to fame of the scattered houses that form Daresbury village is in being the birthplace of "Alice in Wonderland" author Lewis Carroll.

Conference Thematic Focus

The thematic focus of this meeting was *Advanced Computational Research*. Representatives from the partner institutions, and guests, discussed how to solve their scientific problems of interest in appropriate computational infrastructure, in particular, high-performance computers.

HPCx at Daresbury Laboratory

- **The focus of this meeting is on computational modelling leading to scientific discovery.**

1. In the applications domain, the meeting's focus was on the scientific problems of interest to the partners of the SCAT project. Participants gave presentations on their research programmes and the computational challenges they face.
2. In the technology domain, there were specialized lectures in the topics of cluster computing, parallel computing, debugging and profiling, performance tools, scientific libraries. There were talks given by selected vendors of high-performance computing equipment and services.

Conference Announcement Poster PDF:
Poster in A4 format announcing the meeting held 26-30 June 2006 in Daresbury Laboratory.

Location

The meeting was held at the location of Daresbury Laboratory, near Daresbury village in Warrington.

Arriving by air, there are two nearby airports to Daresbury: Liverpool John Lennon Airport is about 40 minutes away by car; Manchester International Airport is 30 minutes away by car. You can find information about which carriers operate at these airports on the respective websites.

If arriving to any of the London airports, Warrington can be easily reached by rail. The two train stations which are closer to the conference hotel (see hotel information below) are Frodsham and Runcorn. Rail times and connections are checked using the National Rail enquiries website.
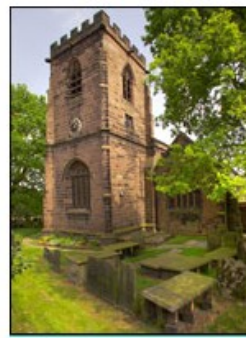
Daresbury church

More instructions on getting there at the Daresbury Lab website >>

Second SCAT European Workshop
September 25-29 2006

"Mathematical Modelling and Challenges in Computational Science"

Host Institutions :
Laboratoire de Modélisation en Mécanique (LMM) www.lmm.jussieu.fr

Laboratoire de Physique et Mécanique des Milieux Hétérogènes
www.espci.fr

<u>Programme of Activities</u>

Monday September 25th	Topic	**Biomechanics**	
	Location	LMM, Tour 55-65, 5th ét., place Jussieu, Salle 501	
9h30-10h30	Welcome: Lorena Barba & Clotilde Nicolle (I.R. of UPMC)	SCAT & Int'l Relation department of UPMC	
10h30-11h	Coffee Break		
11h-12h	Lorena Barba	U. of Bristol	Open questions on SCAT
12h-12h30	N. Dispot, J.M.Fullana, P.Flaud and M.Rossi	MSC, Innoterra, LMM	Atraumatic Inverse Methods in Haemodynamics
12h30-14h	Lunch		
14h-15h	Georges Debrégeas	LPS/ENS	A biomimetic approach to tactile perception
15h-15h30	Ramiro Godoy-Diana, Jean-Luc Aider & José-Eduardo Wesfreid	PMMH	Experiments on the vortex streets produced by a flapping foil
15h30-16h	Coffee Break		
16h-16h30	Pierre-Yves Lagrée	LMM	Boundary layer methods in Biomechanics

Tuesday September 26th	Topic	**Surface flows**	
	Location	LMM, Tour 55-65, 5th floor place Jussieu, Salle 501	
9h-10h	Stéphane Popinet	NIWA, Wellington	TBA
10h-10h30	Coffee Break		
10h30-11h	Andre Nachbin	IMPA, Brazil	New Reduced Models for Wave Propagation over Turbulent Surfaces
11h-11h30	S. Afkhami	Toronto	TBA
11h30-12h	Laurent Duchemin	IRPHE	Boundary integral methods applied to some singular flows
12h-14h00	Lunch		
14h-14h30	Harunori Nakagawa-Yoshikawa & Eduardo Wesfreid	PMMH ESPCI	An interfacial instability under oscillatory shear
14h30-15h	Ismael Herrera	UNAM, Mexico	Consistent modelling of variable bubble-point reservoirs in Petroleum Engineering
15h-15h30	Coffee Break		
15h30-17h	Team meetings	SCAT	Scholarships, Dissemination

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SCIENTIFIC COMPUTING ADVANCED TRAINING

Wednesday September 26th Day off

Thursday September 28th	Topic	**Turbulence**		
	Location	ESPCI, Amphithéatre Langevin, bat N 2eme étage		
9h30-10h	Susana Gomez	UNAM, Mexico	On solving parameter estimation of simulation based optimization problems	
10h-10h30	Jorge Zubelli	IMPA, Brazil	Inverse problems and high performance computing	
10h30-11h	Ivan Delbende, Maurice Rossi	LIMSI-Orsay LMM	Interaction between antiparallel vortices with or without swirl	
11h-11h30	Coffee Break			
11h30-12h00		PMMH	TBA	
12h30-14h00	Lunch			
14h-15h00	Olivier Cadot	ENSTA, Paris	Turbulent drag control of bluff bodies in fully separated regime	
15h-15h30	David Emerson	Daresbury Lab, UK	TBA	
15h30-16h	Coffee Break			
16h-16h30	Stéphane Le Dizés	IRPHE, Marseille	Instability and Aircraft Vortices.	
16h30-17h	T. Duriez, J.-L. Aider and J.E. Wesfreid	PMMH	Mean flow modification by streamwise vortices induced by vortex generators. Application to separated flows.	

19h00	SCAT Dinner	`Restaurant 'Le temps des cerises', 18-20 rue de la Butte-aux-Cailles, Paris XIII (01 4589 6948)`

Friday September 29th	Topic	**Granular flows**		
	Location	ESPCI, Amphithéatre Langevin, bat N 2eme étage		
9h-10h	Pascal Viot	LPTL, Paris	Event-driven Molecular Dynamics of granular gases	
10h-10h30	Pierre-Yves Lagrée & Lydie Staron	LMM DAMTP	Stability of erodible beds- and collapse of a column of grains	
10h30-11h	Coffee Break			
11h-12h00	General Seminar of PMMH: Ernesto Altshuler	Universidad de La Havana	"Strange phenomena in Cuban sands"	
12h30-14h	Lunch			
14h-15h	Wrap up session	SCAT		
Close of meeting				

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SCIENTIFIC COMPUTING ADVANCED TRAINING

Image information | Next research image >>

Search Website [Search]

Meetings and Events

- Listing of Events
- Registration

Related Information

Online Learning
Mobility Grants

Links

Université Pierre et Marie Curie
Lab. de Modélisation en Mécanique
ESPCI
Lab. Ondes et Acoustique
Lab. Physique et Méc. de Milieux
Héterogènes

Second European SCAT Workshop

Paris, 25-29 September 2006.

- **Deadline for Registration:** *12 Sept. 2006*
- **Skip to:**
  - **Conference Thematic Focus**
  - **Location**
  - **Programme**
  - **Fees**

The SCAT partner institutions in Paris will jointly host this scientific meeting. They are: the Laboratoire de Modélisation en Mécanique (LMM), which belongs to Pierre and Marie Curie University, and two labs from ESPCI —the Laboratoire Ondes et Acoustique (LOA) and the Laboratoire Physique et Mécanique de Milieux Héterogènes (LPMMH).

The city of Paris needs little introduction.

ESPCI was founded by the end of the 19th century, after France lost the best school of chemistry of the time, due to the German annexation of Alsace and Lorraine. The new school soon became the center of scientific activity in the areas of physics and chemistry. The brothers Pierre and Jacques Curie started in 1880 their studies of the electric properties of crystals, leading to the discovery of piezoelectricity. In 1897, Marie Curie started her studies of radiation, leading to her joint discoveries with her husband of the new elements Polonium and Radium, and to their being awarded the Nobel prize in 1903. Other prestigious members of this school are Paul Langevin, Frédéric Joliot-Curie, Pierre-Gilles de Gennes and Georges Charpak.

Université Pierre et Marie Curie (UPMC), or Paris VI, was built in the 1950s. The Jussieu campus soon became a symbol of scientific endeavour in the heart of Paris. In 1968, the Paris Faculty of Science was divided into a number of different universities. The University of Paris VI, set up in 1971, was the main heir to the scientific tradition; it shares the Jussieu campus with University of Paris VII and the Paris Geophysical Institute (Institut de Physique du Globe). In 1974, Paris VI adopted the official title "Université Pierre et Marie Curie"; it is now the largest scientific and medical complex in France, active in all fields of research with achievements at the highest level.

Conference Thematic Focus

The thematic focus of this meeting is on *Mathematical Modelling and Challenges in Computational Science*. The following four sub-topics will be emphasized:

1. Turbulence
2. Granular flows
3. Interfacial hydrodynamics
4. Bio-mechanics

Invited Lectures

The following speakers participated as invited lecturers:

- **Arnaud Chauviére, Politécnico Turin**
- **Georges Debrégeas, LPS-ENS**
- **Stéphane Popinet, NIWA (Australia)**
- **Olivier Cadot, ENSTA (Paris)**

Programme

Conference Programme PDF:
Daily programme of activities, and scientific presentations.

SCAT meeting template in PPT:
Use this template for preparing PowerPoint presentations for the Paris meeting.

Location

The meeting was held in LMM-University of Paris VI, located at 4 place Jussieu (Mon.-Tues. sessions), and ESPCI, located at 10 rue Vauquelin. Both locations are in the Vth Arrondissement, one of the central arrondissements of Paris, in the left bank. The two closest Metro stations are Jussieu (for LMM-University of Paris VI) and Place Monge or Censier Daubenton (for ESPCI). All these stations are on Line 7.

See the location map on the ESPCI website >>

Location map of University of Paris VI (P. et M. Curie) >>

Rue Mouffetard

One of the city's oldest streets, rue Mouffetard is a few steps away from the campus of ESPCI in rue Vauquelin. Its famous street market has been traced to the 14th century, and today's various ethnic restaurants offer a wide choice of delicious foods.

Conference Fees

Conference fees for SCAT members correspond to the 25% co-financing of the SCAT meeting allowance, according to the "General Rules" document. This document is available in the project's Blackboard site, and all members are required to inform themselves of its contents.

Conference fees, by category	
SCAT members	€150 (4 days) €187.5 (5 days)
Academic, non-members	€250

○ back to top

First Latin-American SCAT Workshop and Summer School
January 04-12 2006

"*Advanced Scientific Computing and Applications*"

Host Institution : Universidad Técnica Federico Santa María (USM)   www.utfsm.cl
Dept. of Mathematics   www.mat.utfsm.cl
Dept. of Informatics   http://portal.inf.utfsm.cl/
Dept. of Mechanics   http://www.mec.utfsm.cl/es/index.php

Local contact person and coordination: Raquel Pezoa, +56 32 265 4421

<u>Programme of Activities</u>

Thursday January 04th	Topic	**Welcome and informal meeting**	
	Location	USM, Salón de Honor	
15h30-16h30	Informal discussion	SCAT	Dissemination
15h30-16h00	Coffee Break		
16h30-17h30	Joint scientific meetings	SCAT	Scientific collaboration Open discussion

Friday January 05th	Topic	**SCAT Research talks**	
	Location	USM, Salón de Honor	
10h00-10h15	Lorena Barba	Bristol, UK	Welcome to all participants
10h15-10h50	Lorena Barba	Bristol, UK	Vortex multipoles and vortex quasimodes: the parallels and differences between coherent structures of fluids and plasmas
10h50-11h40	Felipe Barra	DFI - UChile	Non-equilibrium Lorentz gas on a curved space
11h40-12h10	Coffee Break		
12h10-13h00	Andre Nachbin	IMPA, Brazil	A reduced model for internal waves interacting with topography at intermediate depth
13h00-14h30	Lunch		
14h30-15h20	Marcus Sarkis	IMPA, Brazil	Stochastic Galerkin Methods for Elliptic PDEs: A White Noise Approach
15h20-16h10	Marcel Clerc	DFI - UChile	Universal description of stochastic super-critical bifurcation: Theory, Simulations and experiments
16h10-16h40	Coffee Break		
16h40-17h30	TBD	TBD	TBD

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Saturday January 06th

	Topic	**SCAT**	
	Location	USM, Edificio A, **Salón de Honor**	
10h00-10h50	Patricio Cordero	DFI Uchile	The mechanism for phase separation in shallow granular systems
10h50-11h20	Coffee Break		
10h00-10h50	Scholarship Team	SCAT	SCAT grant holders' selection
11h20-12h10	Scholarship Team	SCAT	SCAT Apple Prize selection
13h00-14h30	Lunch		
14h30-15h20	Alberto Verga	IRPHE, France	Nonequilibrium phenomena in solids #1
15h20-16h10	Alberto Verga	IRPHE, France	Nonequilibrium phenomena in solids #2

Sunday January 07th

Day off.

Monday January 08th

	Topic	**Courses I**	
	Location	USM Departamento de Informática, **Auditorio F-106**	
10h00-10h50	Alberto Verga	IRPHE, France	Nonequilibrium phenomena in solids #3
10h50-11h40	-	-	-
11h40-12h10	Coffee Break		
12h10-13h00	Alberto Verga	IRPHE, France	Nonequilibrium phenomena in solids #4
13h00-14h30	Lunch		
14h30-15h20			
15h20-16h10	Rodrigo Soto	DFI - UChile	Molecular dynamics simulation of granular fluids #1
16h20-16h50	Opening speeches & I.R. of USM	USM, Chile	Prensa, Discurso de autoridades, Sponsors, SCAT Group picture
17h00	**Cocktail**		
20h30	SCAT Dinner		

Monday January 08th

	Topic	**Courses II**	
	Location	USM Departamento de Informática, **LabComp**	
10h00-10h50	Markus Sarkis	IMPA, Brazil	Schwarz methods for Partial Differential (practical) #1 *MATLAB required*
10h50-11h40	David Emerson	Daresbury Lab. UK	An introduction to parallel computing for CFD #1
11h40-12h10	Coffee Break		
12h10-13h00	Markus Sarkis	IMPA, Brazil	Schwarz methods for Partial Differential (practical) #2 *MATLAB required*
13h00-14h30	Lunch		
14h30-15h20	David Emerson	Daresbury Lab. UK	An introduction to parallel computing for CFD #2
15h20-16h10	-	-	-

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SCIENTIFIC COMPUTING ADVANCED TRAINING

Tuesday January 09th	Topic	**Talks**	
	Location	USM Edificio A, **Salon de Honor**	
10h00-11h30	**Open Doors session**		
11h30-12h00	Coffee Break		
12h00-12h30	INTEL	Chile	Sponsor's Talk
12h30-13h00	MICROSOFT	Chile	Sponsor's Talk
13h00-13h30	DELL	Chile	Sponsor's Talk
13h30-14h30	Lunch		

Tuesday January 09th	Topic	**Courses I**	
	Location	USM Departamento de Informática, **F-106, LabComp**,	
10h00-11h30	-	-	-
11h30-12h00	-		
12h00-13h30	-	-	-
13h30-14h30	Lunch		
14h30-15h20	Markus Sarkis	IMPA, Brazil	Schwarz methods for Partial Differential (practical) #3 *MATLAB required*
15h20-16h10	Charles Meneveau	J. Hopkins Uni (USA)	The simulation of Fluid Turbulence #1
16h10-16h40	Coffee Break		
16h40-17h30	Charles Meneveau	J. Hopkins Uni (USA)	The simulation of Fluid Turbulence #2

Wednesday January 10th	Topic	**Courses I**	
	Location	USM Departamento de Informática, **LabComp**	
10h00-11h40	-	-	-
11h40-12h10	-		
12h10-13h00	-	-	-
13h00-14h30	Lunch		
14h30-15h20	-	-	-
15h20-16h10	Matthew Knepley	Argonne Nat. Lab. -USA	Introduction to PETSc #1 *Cluster access*
16h10-16h40	Coffee Break		
16h40-17h30	Matthew Knepley	Argonne Nat. Lab. -USA	Introduction to PETSc #2 *Cluster access*

Wednesday January 10th	Topic	**Courses II**	
	Location	USM Departamento de Informática, **Auditorio F-106**	
10h00-10h50	Mike Ashworth	Daresbury Lab. UK	Parallel Scientific Programming (Theory) #1
10h50-11h40	David Emerson	Daresbury Lab. UK	An introduction to Microfluidics #1
11h40-12h10	Coffee Break		
12h10-13h00	Mike Ashworth	Daresbury Lab. UK	Parallel Scientific Programming (Theory) #2
13h00-14h30	Lunch		
14h30-15h20	Manel Soria, Assensi Oliva	UPC, Spain	Dinámica de fluidos computacional con ordenadores paralelos #1
15h20-16h10	Manel Soria, Assensi Oliva	UPC, Spain	Dinámica de fluidos computacional con ordenadores paralelos #2
16h10-16h40	Coffee Break		
16h40-17h30	Manel Soria, Assensi Oliva	UPC, Spain	Dinámica de fluidos computacional con ordenadores paralelos #3

SCIENTIFIC COMPUTING ADVANCED TRAINING

Thursday January 11th

		Topic	**Courses I**	
		Location	USM Departamento de Informática, **LabComp**	
10h00-10h50	-		-	-
10h50-11h40	Mike Ashworth	Daresbury Lab. UK	Parallel Scientific Programming #3 (*Laboratory w/Cluster access*)	
11h40-12h10	Coffee Break			
12h10-13h00	Mike Ashworth	Daresbury Lab. UK	Parallel Scientific Programming #4 (*Laboratory w/Cluster access*)	
13h00-14h30	Lunch			
14h30-15h20	-		-	-
15h20-16h10	Matthew Knepley	Argonne Nat. Lab. -USA	Introduction to PETSc #3 *Cluster access*	
16h10-16h40	Coffee Break			
16h40-17h30	Matthew Knepley	Argonne Nat. Lab. -USA	Introduction to PETSc #4 *Cluster access*	

Thursday January 11th

		Topic	**Courses II**	
		Location	USM Departamento de Informática, **Auditorio F-106**	
10h00-10h50	David Emerson	Daresbury Lab. UK	An introduction to Microfluidics #2	
10h50-11h40	-		-	-
11h40-12h10	Coffee Break			
12h10-13h00	-		-	-
13h00-14h30	Lunch			
14h30-15h20	Rodrigo Soto	DFI - UChile	Molecular dynamics simulation of granular fluids #2	
15h20-16h10	-		-	-
16h10-16h40	Coffee Break			
16h40-17h30	Rodrigo Soto	DFI - UChile	Molecular dynamics simulation of granular fluids #3	

Friday January 12th

		Topic	**Course I**	
		Location	USM Departamento de Informática, **Auditorio F-106**	
10h00-10h50	David Emerson	Daresbury Lab. UK	An introduction to Microfluidics #3	
10h50-11h40	Rodrigo Soto	DFI - UChile	Molecular dynamics simulation of granular fluids #4	
11h40-12h10	Coffee Break			
12h10-13h00	Wrap up session	Group picture		
		Close of meeting		
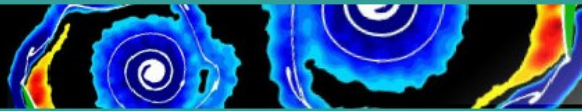
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SCIENTIFIC COMPUTING ADVANCED TRAINING

Image information | Next research image >>

Meetings and Events

- Listing of Events
- Registration

Related Information

Online Learning
Mobility Grants

Links

Universidad T. F. Santa Maria
Santiago international airport

Conference Hotels

Hotel Somerscales
Hotel Ultramar

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First Latin American SCAT Workshop and Summer School

Federico Santa María Technical University
Valparaiso, 4-12 January 2007.

- Skip to:
  - **Conference Thematic Focus**
  - **Programme**
  - **Location**
  - **Fees**
  - **Sponsors**

Universidad Técnica Federico Santa María is one of the most prestigious institutions of higher study in Chile. It owes its origin to the idea of the visionary businessman Federico Santa María of creating an institution of higher education that would transform teaching of science and technology in Chile.

The university has breathtaking views of Valparaiso bay.

In the early 1920's, the businessman Federico Santa María decided to leave a gift to the city of Valparaíso and the country. His intention was to help talented students who did not have the means to pursue studies, to enable them to contribute to the development and progress of Chile. A foundation was created in 1926 to organize, maintain and develop several schools of arts and crafts, and schools of engineering, in different locations of the country. One of them was the *Escuela de Artes y Oficios y Colegio de Ingenieros Jose Miguel Carrera*, which opened in 1931. The official title changed in 1935 to Universidad Técnica Federico Santa María.

The university gave a great push to research in technology in the mid-twentieth century, creating the Graduate School in 1960; it was the first university in Latin America to confer the degree of Doctor in Engineering in 1963.

Today, Universidad Santa María has several additional campuses in the main cities of Chile, as well as an international campus in Ecuador. In the year 2000 it created –in partnership with Lan Chile airlines– the Academy of Aeronautical Sciences in Santiago, the first of its kind in Latin America.

Announcement poster (PDF)
A full color poster in A4 size, announcing the SCAT summer school in Valparaíso. Includes topics of minicourses and invited lecturers.

Thematic Focus

The thematic focus of this meeting was on *Advanced Scientific Computing and Applications*. A one-week summer school was offered on high-performance computing for scientific applications, and modern topics in computational science.

HPCx at Daresbury Laboratory

The summer school provided the opportunity for local students and staff to learn about the latest technologies and methods of scientific computing. The series of lectures focused in hands-on learning of parallel programming, working with Beowulf clusters, grid computing, and specialized scientific libraries.

There were also a series of mini-courses in applications: microfluidics, turbulence, granular flows, nanostructures, among others.

Special mini-course! A special set of lectures on PETSc, the Portable, Extensible Toolkit for Scientific Computation. This highly advanced parallel library is a joint development of University of Chicago and Argonne National Laboratory. Lecturer: Matthew Knepley.

Summer School Lecturers

- David Emerson, Daresbury Laboratory (UK)
- Mike Ashworth, Daresbury Laboratory (UK)
- Matthew Knepley, Argonne National Laboratory (Chicago, USA)
- Alberto Verga, Institut de Recherche IRPHE (France)
- Marcus Sarkis, Instituto de Matemática Pura e Aplicada (Brazil)
- Rodrigo Soto, Patricio Cordero, Depto. de Física (U. Chile)

Invited lecture by

- Professor Charles Meneveau, Johns Hopkins University (USA)

Programme

Conference Programme (PDF)
Daily programme of activities, courses and scientific presentations.

SCAT template for slides in PPT:
Use this template for preparing PowerPoint presentations for the Valparaíso SCAT workshop and summer school.

Mini-courses in the following topics:

1. Parallel Scientific Programing
2. Domain Decomposition
3. Linear Iterative Solvers
4. The PETSc library for scientific computing
5. Microfluidics
6. Nanostructures
7. Fluid turbulence
8. Molecular dynamics of granular materials

Download Course Descriptions

Course descriptions are posted below.

Introduction to Microfluidics
At the scales of microns, fluids are usually in the laminar regime, and mixing is by diffusion. Other consquences of scaling down also covered.

Parallel Scientific Programming
An introduction to the theory and practice of parallel programming through a series of short lectures coupled with practical programming sessions.

Introduction to Computational Fluid Dynamics
The basic principles of communicating data between processors and how typical numerical solvers perform in parallel. The test application is the steady-state heat conduction equation.

Schwartz methods for Partial Differential Equations
These lectures focus on the mathematical foundation of domain decomposition, using as example the solution of Poisson's equation.

Molecular dynamics simulation of granular fluids
The course describes a very efficient algorithm for simulating granular fluids and the method to compute the hydrodynamic fields.

Dinámica de Fluidos computacional en ordenadores paralelos
Breve panorámica desde las ecuaciones básicas a las aplicaciones indutriales. *This course is in Spanish.*

The simulation of Fluid Turbulence
Two lectures on fluid turbulence, concentrating on the physics and simulation, and summarizing modern modeling techniques and applications.

Nonequilibrium phenomena in solids (Nanostructures)
An account of the physical processes involved in the formation of nanostructures on the surface of a growing crystal, focusing on the construction of models.

Introduction to PETSc
The Portable, Extensible Toolkit for Scientific Computation (PETSc) provides a framework for development of computational science codes in parallel, using the message passing model.

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Location

The meeting and short course were held at Universidad T. F. Santa María, in Valparaíso, Chile.

International flights arrive to Chile into *Aeropuerto Arturo Merino Benitez* in Santiago (airport code is SCL), departing from the main European cities. There are direct flights from Paris, Madrid and Frankfurt, and connections from London can stop at these cities or Sao Paolo in Brazil (such is the case of British Airways).

Valparaíso is located 120 km to the northwest of Santiago, and bus connections are frequent and comfortable. Information on transfers from the airport is included at the end of the document on conference hotels (below).

Campus map on the university website >>

Simple map of Chile >>

Conference hotel

The SCAT coordination office has made a block booking in the small but magnificent Hotel Somerscales. SCAT attendants will benefit from a sizable discount (see PDF document below).

Alternatively, rooms were reserved at Hotel Ultramar, a recent conversion of a listed building with interesting art-nouveau furnishings. The hotel has offered a discount to SCAT attendants (see details in the PDF document below).

Conference hotel information PDF:
Information about Somerscales Hotel and Ultramar Hotel: the amenities, cost and room booking options, as well as how to get there.

First Latin American SCAT Summer School

Universidad Técnica Federico Santa María, Valparaíso

An introduction to parallel computing for CFD

One of a series of mini-courses taking place 6-12 January 2007

Description

Parallel computing is now a key aspect of scientific discovery using mathematical modelling. This course will consist of a set of lectures (approximately two 50 min. sessions) that will introduce the basic concepts of parallel computing for schemes that use computational grids to discretise the governing equations. The course is intended as an introduction for students new to parallel processing and will teach how to develop numerical software to run on any type of parallel computer, from a cluster to a supercomputer. The talks will cover the basic principles of communicating data between processors and how typical numerical solvers perform in parallel. The test application will be the steady-state heat conduction equation.

The course will cover:

- ▸ Introduction to the grid partitioning
  - ▸ Solving a simple function in parallel
  - ▸ Communication strategies - local and global
  - ▸ How to avoid creating bottlenecks
- ▸ Solving the heat conduction equation in parallel
  - ▸ Explicit, implicit and iterative solvers in parallel
- ▸ Comments on some CFD solvers

Lecturer:

Dr David Emerson, Head of the Computational Engineering Group
Daresbury Laboratory, United Kingdom

This course will be in English.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

SCAT

SCIENTIFIC COMPUTING ADVANCED TRAINING

First Latin American SCAT Summer School

Universidad Técnica Federico Santa María, Valparaíso

Parallel Scientific Programming
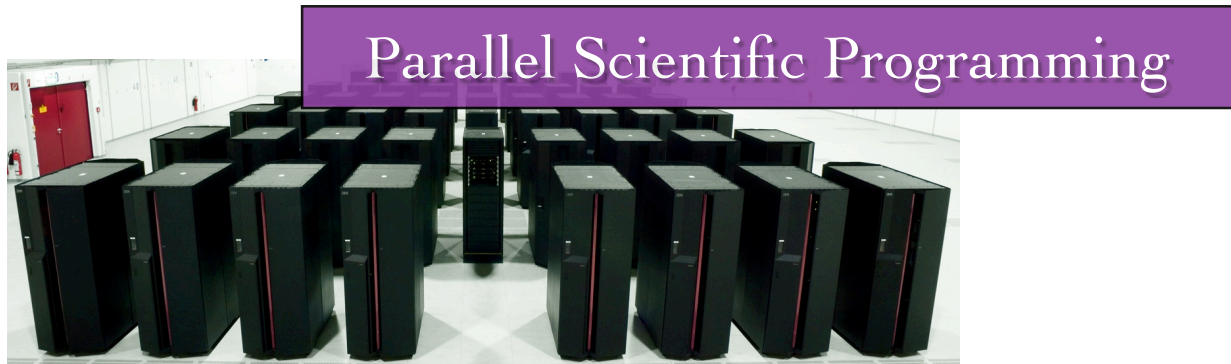
One of a series of mini-courses taking place 6-12 January 2007

Description

The exploitation of high-performance parallel computers has become an indispensable tool for making progress in computer simulation across a wide range of scientific disciplines. Resources cover a huge range from desktop systems, through departmental clusters up to national facilities with several thousand processors. The transition from serial programming to parallel requires the grasp of new concepts, new programming environments and a new mindset.

We shall present an introduction to the theory and practice of parallel programming through a series of short lectures coupled with practical programming sessions.

The course will cover:

‣ Introduction to Parallel Programming

‣ Parallel Architectures - Hardware & Software

‣ Message Passing Interface, MPI

‣ Fortran 90, tools, and numerical libraries

Lecturer:

Dr Mike Ashworth, Head of the Advanced Research Computing Group
Daresbury Laboratory, United Kingdom

This course will be in English.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

SCAT

SCIENTIFIC COMPUTING ADVANCED TRAINING

First Latin American SCAT Summer School

Universidad Tecnica Federico Santa Maria, Valparaiso

Introduction to Microfluidics

One of a series of mini-courses taking place 8-12 January 2007

Description

This course will consist of a set of lectures (approximately three/four 50 min. sessions) that will introduce the new discipline of microfluidics. This topic is concerned with fluid flowing in channels that range in size from 0.1 microns (1 micron = 10^{-6}m) to 1 millimetre. At these scales, the Reynolds number is small, typically < 1, and the flow is in the laminar regime. This makes mixing, which is generally by diffusion, quite challenging. However, the flow can also be manipulated in different ways (e.g., using electric fields) opening up the possibility of pumping with no moving parts. Scaling devices down often introduces new physics and effects that need to be considered which are usually ignored in conventional devices, e.g., surfaces now play a very important role. Moreover, for gas flow, the assumptions underlying the Navier-Stokes equations begin to break down. This makes modelling gaseous transport very challenging.

The course will broadly cover:

‣ Introduction to the field of microfluidics
‣ The view from the top (microfluidics from a macroscopic perspective)
‣ The view from the bottom (microfluidics from a microscopic perspective)
‣ Consequence of scaling down, important dimensionless parameters

Advanced topics:

‣ Gas-phase flow at the micro-scale
‣ Mixing
‣ Digital microfluidics through manipulating droplets

Lecturer:

Dr David Emerson, Head of the Computational Engineering Group
Daresbury Laboratory, United Kingdom

This course will be in English.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

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Universidad Técnica Federico Santa María, Valparaíso

Nonequilibrium phenomena in solids:
Applications to the dynamics of nanostructures
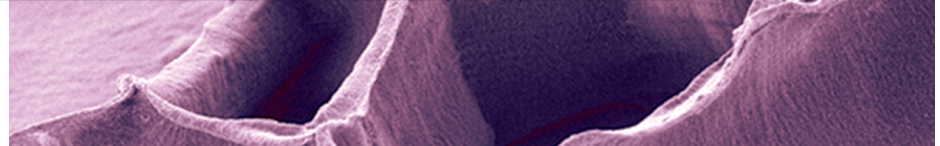
One of a series of mini-courses taking place 6-12 January 2007

Description

The aim of this mini-course is to provide a brief account of the physical processes involved in the formation of nanostructures on the surface of a growing crystal. It focuses on the construction of models starting at the atomic level, where physical processes are dominated by the kinetics and the elasticity of adsorbed atoms, and reaching the macroscopic level, dominated by growth instabilities and nonlinear effects, to describe the surface evolution. As a specific example we consider the epitaxial growth of semi-conductor materials (silicon and germanium Si/Ge) to study the stability of the step flow (bunching and meandering) and the stability of a strained solid film (coupling between mass transport and elasticity).

Contents

‣ Basic models of epitaxial growth — The crystal surface, surface energy and chemical potential. Singular and rough surfaces. Phenomenological equations of surface growth.

‣ Kinetics of adsorbed atoms — The vicinal surface: steps, terraces and surface reconstruction. Diffusion of adatoms, kinetics of the attachment, the Schwoebel effect. The Burton, Cabrera and Frank model.

‣ Stability of the step flow — Nonlinear models of the step flow instabilities, bunching and meandering; derivation of the evolution equations of the surface homoepitaxial growth. Analytical and numerical methods.

‣ Elasticity of steps and solid films — Elastic field created by the misfit between the substrate lattice and the deposited film. The Grinfeld instability. Steps interactions. Numerical models. The nonlinear evolution of a strained film. The kinetic roughening transition, stochastic effects.

Lecturer:

Dr Alberto Verga, Institut de Recherche sur Phénomènes Hors Equilibre
Université de Provence

This course can be offered either in English or Spanish. The organizers will decide according to the needs of the local participants, and it will be announced soon.

For more information, email
info@scat-alfa.eu or visit www.scat-alfa.eu

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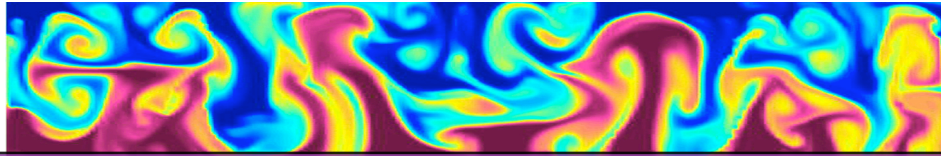
The simulation of Fluid Turbulence

One of a series of mini-courses taking place 6-12 January 2007

This course will consist of two lectures on fluid turbulence, concentrating on the physics and simulation, and summarizing modern modeling techniques and applications.

Lecture I: Basic Physics and Simulation

Turbulent flows occur in many natural and man-made phenomena, whenever inertial forces overwhelm viscous forces in a fluid. In this presentation, we will review some basic properties of turbulent flows, and summarize the challenges in simulating such flows on a computer. We review Reynolds averaged, direct numerical, and Large Eddy Simulation techniques. For the latter, we summarize some of our own recent wind tunnel studies to test different models.

Lecture II: Dynamic models in Large Eddy Simulation

In this talk we derive and present the basic notions underlying so-called dynamic models of turbulence. The idea is that these models do not require specification of ad-hoc coefficients. Various techniques and applications to environmental fluid mechanical problems will be summarized.

Lecturer:

Prof Charles Meneveau, Head of the Turbulence Research Group
Johns Hopkins University, Maryland USA

This course can be offered either in English or Spanish. The organizers will decide according to the needs of the local participants, and it will be announced soon.

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Universidad Técnica Federico Santa María, Valparaíso

Introduction to PETSc

One of a series of mini-courses taking place 6-12 January 2007

Description

The Portable, Extensible Toolkit for Scientific Computation (PETSc) provides a framework for development of computational science codes. Although scalability and high performance are crucial for scientific applications, the usability often turns upon other software factors, such as version control, modular design, and extensibility. We will discuss each of these issues in the context of PETSc development. Moreover, we will present examples of PDE solvers developed in PETSc with advanced capabilities, such as unstructured meshes, multigrid, and parallel sparse direct solvers. This course should enable a researcher to independently develop usable, scalable, extensible code with PETSc.

Attendees are encouraged to bring a laptop as installation help will be provided.

Visit the PETSc web site: www.mcs.anl.gov/petsc

The course will cover

- ‣ Design of large scale simulations
- ‣ Solution of linear and nonlinear algebraic systems
- ‣ Debugging, profiling, and management of scientific code
- ‣ Structured and unstructured meshes
- ‣ Example problems in PETSc

Lecturer:

Dr Matthew G. Knepley, Argonne National Laboratory, Chicago, IL.

This course can be offered in English.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

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Molecular dynamics simulation of granular fluids
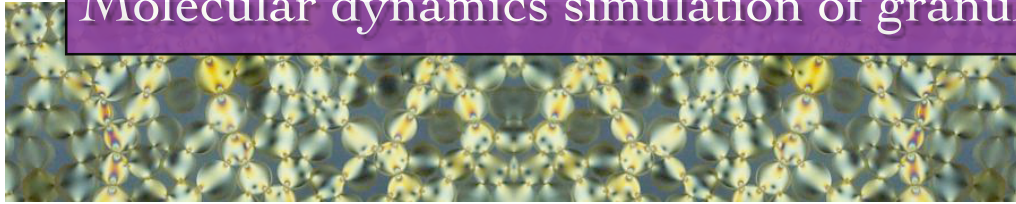
One of a series of mini-courses taking place 6-12 January 2007

Description

The dynamics of granular fluids shows many interesting phenomena such as collective instabilities, pattern formation, segregation, avalanches, solid/liquid/gas-like coexistence, etc. Simulations have become an important tool to study granular fluids because of the accessibility to both the internal grain dynamics and the global characterization. Parameters can be easily changed making it possible to explore situations difficult to attain in experiments or to describe with theory.

In a series of lectures we will describe a very efficient algorithm for simulating granular fluids and the method to compute the hydrodynamic fields in complex flows. Examples and applications will be presented in the lectures.

The course will cover:

- ▸ The inelastic hard sphere model. Collision rules.
- ▸ Event-driven molecular dynamics simulations. Basic concepts.
- ▸ Event-driven molecular dynamics simulations. Optimization.
- ▸ Computation of global averages.
- ▸ Computation of hydrodynamic fields.

Lecturer:

Dr Rodrigo Soto, Departamento de Física, FCFM, Universidad de Chile
Santiago, Chile

This course will be in Spanish.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

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Schwarz methods for Partial Differential Equations
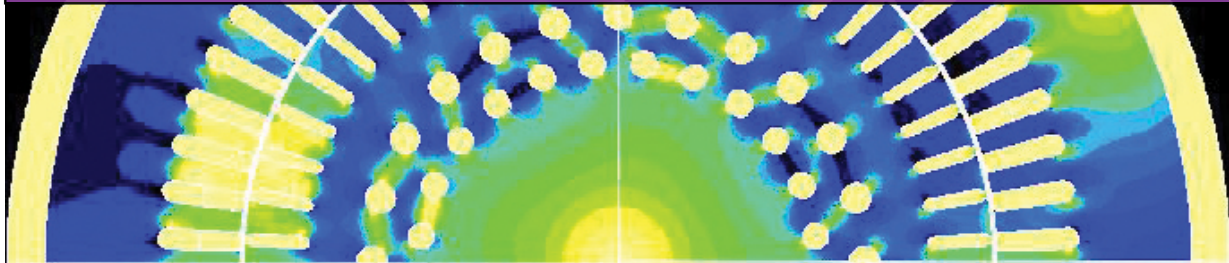
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Description

Domain Decomposition Methods for Partial Differential Equations have become topics of intense interest in research over the past years because they not only provide effective computing strategies suitable for high performance computing but can provide an elegant and complete analysis of the algorithms. In these lectures, I will focus on the mathematical foundation of domain decomposition concentrating our effort on a study of lower order finite element approximation of Poisson's equation. The goal is to provide the basics of the theory in order to demonstrate what mathematical tools are required and what can be done and to test the methods using Matlab.

The course will cover:

- ▸ Basics in Finite Elements
- ▸ Basics in Krylov-Type Methods
- ▸ Domain Decomposition Methods
- ▸ Overlapping Schwarz Method
- ▸ Schur Complement-type Methods

Lecturer:

Dr Marcus Sarkis, Instituto de Matematica Pura e Aplicada
Rio de Janeiro, Brazil

This course will be in English.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

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First Latin American SCAT Summer School
Universidad Técnica Federico Santa María, Valparaíso

Dinámica de fluidos computacional con ordenadores paralelos

One of a series of mini-courses taking place 6-12 January 2007

Descripción
Breve panorámica desde las ecuaciones básicas a las aplicaciones industriales

Contenido:
- Objetivos de las dinámica de fluidos computacional.
- Ecuaciones de Navier-Stokes. Principios físicos, formulación matemática. Flujos laminares y turbulentos. Una perspectiva para ingenieros.
- Métodos numéricos para la solución de las ecuaciones de Navier-Stokes. Discretización espacial y temporal. Linealización. Solución del acoplamiento presión-velocidad. Conservación de masa, momentum y energía. Solución de las ecuaciones discretas. Mallas estructuradas y no estructuradas.
- Validación y verificación de códigos.
- Uso de ordenadores paralelos para dinámica de fluidos computacional. Tipos de ordenadores paralelos, desde clusters a superordenadores.
- Algebra paralela. Método Krylov-Schur-Fourier.
- Aplicaciones industriales. Energías renovables: Energía solar térmica de alta temperatura (central PS10). Refrigeración de equipos de electrónica de potencia en aerogeneradores. Diseño de intercambiadores de calor compactos. Diseño de cortinas de aire, flujo en salas limpias.
- Simulación directa de flujos turbulentos (DNS) en clusters y superordenadores.

Dictado por:
Dr Manel Soria & Dr Assensi Oliva, Centro Tecnológico de Transferencia de Calor
Universidad Politécnica de Catalunya, Barcelona.

Este curso se dictará en Castellano.

For more information, email info@scat-alfa.eu or visit www.scat-alfa.eu

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SCAT APPLE PRIZE

One SCAT grantee will win a fantastic, brand new black MacBook, from Apple Computer, Inc.

Courtesy of
Dr Massimo Marino,
European Research &
Scientific Programs,
Apple EMEA.

Apples are for the good of science
SCAT project support from Apple

By Dr Lorena Barba, project leader

Apple Computers believe that with Mac OS X they offer today the ideal platform for scientific researchers. Frankly, I do not disagree!

At the 2nd SCAT scientific workshop in Daresbury Laboratories, UK, Apple representatives attended to speak about the use of Macs for science, and about the use of podcasting for education. They also offered a prize!

The best SCAT grantee of 2006 will receive a gift of a powerful MacBook with Intel Core 2 Duo second generation chip.

This is a prize for achievement, and therefore there will be a selection process. All SCAT grantees are invited to submit an entry, consisting of the following parts:

1. Summary of the research carried out so far during the SCAT visit.
2. Description of the research to be carried out, objectives and importance.
3. Personal goals for the future after the SCAT visit.
4. Why they think they want a Mac computer!

Hint: to answer part 4, applicants may want to read Dr Marino's presentation slides "Mac for Science: from Data Analysis to Publication, seamlessly". These are available in the SCAT project's Blackboard site, in the folder of presentations for the Daresbury meeting.

Applicants should also request a letter of support (via email) from their supervisor at the SCAT host institution.

The selection will proceed together with deliberations for the award of the next round of mobility grants, in the 4th SCAT meeting in Valparaiso, Chile, on January 6, 2007. Therefore, entries must be received by 5pm Chile time, on 5 Jan. Please submit your entries by using Blackboard's digital dropbox (and confirming by email) or directly by email to:
l.a.barba@bristol.ac.uk and
boris.drappier@bristol.ac.uk

The winner will be announced on 8 Jan. at the SCAT summer school Valparaiso Opening Ceremony.

Appendix C

Dissemination: Press and web appearances

C.1   Press release, University of Bristol, December 2005.

C.2   Press release, Universidad Técnica Federico Santa María, December 2005 — and various appearances in the tech news sites.

C.3   Zonta International Foundation article, January 2006

C.4   Article in the local newspaper, *El Mercurio* (Jan. 06)

C.5   Press release, Universitat Politécnica de Catalunya, February 2006 (in Catalan).

C.6   Interview with Dr. Lorena Barba, *Diari de Terrassa*, 4 March, 2006, plus other appearances in the local press.

C.7   *Perfiles Industrial y Aeronáutico*, magazine of Unversidad Politécnica de Catalunya.

C.8   Interview with Dr. Vladimir Tchijov in *Gaceta UNAM*, the magazine of Universidad Nacional Autónoma de México, plus advertisements of the mobility grants programme (April and May 2006).

C.9   Piece on the Bristol *MathsGrad* alumni magazine about the SCAT project; pages 1 and 4 of the magazine reproduced here.

C.10   Article in September 2006 issue of the University of Bristol's *Research* magazine.

C.11   Newspaper article in the event of the First Latin American SCAT Workshop and Summer School (Valparaíso, Jan. '07) plus news announcements on the web site of Universidad Técnica Federico Santa María.

University of Bristol

News

Major venture into computer-aided scientific research

[*14 December 2005*]

Aproject aimed at improving understanding of how best to use computers in the field of scientific discovery is being launched by Bristol University.

The University has signed a three-year contract, worth around £900,000 (1.34 million Euro), with the European Commission to work with institutions across Europe and Latin America.

The Scientific Computing Advanced Training (SCAT) project will provide for 20 research scholarships worth around £11,000 (16,520 Euro) each.

A post-graduate mathematics student from Bristol University will have the chance to spend eight months in Brazil, Chile or Mexico as part of the project.

In addition, 16 students from Latin America will travel to partner institutions in the UK, Spain and France for extended periods of study, including four here at Bristol.

A total of 10 institutions on both sides of the Atlantic are involved as part of the Network for Advances in Computational Science and Engineering.

The project will also see a number of international workshops and meetings related to scientific computing take place in Europe and Latin America.

"During the last 20 years or so, scientific computing has become an essential part of discovery and research."

Dr Lorena Barba

SCAT will be launched in February next year (2006) in Barcelona and the first workshop will take place at the Daresbury Laboratory in Warrington in June. There will be another workshop held in Chile in January 2007.

Dr Lorena Barba, SCAT co-ordinator and lecturer in applied mathematics at the University of Bristol, said: "During the last 20 years or so, scientific computing has become an essential part of discovery and research.

"In particular, it is vital for the solution of problems that may be insoluble by theory and experiments alone, for example, the prediction of future climates.

"It is also an essential approach when laboratory studies may be hazardous, such as the use of toxic chemicals. It is also useful when traditional means become too expensive or time-consuming."

Dr Barba, who came to Bristol from Chile four years ago, said that developments in computers had also allowed more institutions access to powerful High Performance Computing (HPC) technology, such as those in Latin America partner countries.

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UNIVERSIDAD TECNICA
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Proyecto de Computación y Sistemas con Ues europeas

Culminando una fase del desarrollo de la Computación Científica y de los Sistemas Complejos, los académicos de la Universidad Santa María, Dres. Oscar Orellana y Luis Salinas, en colaboración con la Dra. Lorena Barba, Ingeniero Civil Mecánico perteneciente a la Universidad de Bristol, presentaron el proyecto "Scientific Computing Advanced Training", recientemente aprobado por la Comunidad Europea por intermedio de la "EuropeAid Cooperation Office".

Con el objetivo de profundizar en el conocimiento de la Computación Científica y los Sistemas Complejos, que constituyen hoy día áreas de intensa actividad de investigación, desarrollo y aplicaciones a sistemas de muy diversa naturaleza que incluyen la Ingeniería, la Economía y la Biología, los académicos de la Universidad Técnica Federico Santa María, Dr. Oscar Orellana, del Departamento de Matemática y Dr. Luis Salinas, del Departamento de Informática, en conjunto con la Dra. Lorena Barba, Ingeniero Civil Mecánico del plantel y PhD. en Aeronáutica, del Institute of Technology de California crearon el proyecto "Scientific Computing Advanced Training", SCAT.

La coordinadora europea del proyecto, Dra. Lorena Barba, explicó que "el proyecto SCAT se enfoca al campo de la Ingeniería y Ciencia Computacional. Esto se entiende como un campo interdisciplinario, que incorpora matemáticos, físicos, ingenieros, e incluso biólogos y otros científicos, y complementa la Ciencia de la Computación poniendo el énfasis no sólo en la tecnología computacional propiamente tal, sino también en el uso de la Computación para la investigación científica y las aplicaciones de la Ingeniería de alto nivel".

En este sentido, la Dra. Barba señaló que "nuestro enfoque en la Computación Científica está basado en la idea de que la computación de alto desempeño, hoy en día es un elemento más de la investigación científica, junto con los métodos experimentales y analíticos, y el motivo de impulsar un proyecto de colaboración en esta materia, es la convicción de que la Ingeniería y la Ciencia Computacional ya están jugando un papel dominante en los procesos de diseño en Ingeniería y el descubrimiento científico. Por lo tanto, al desarrollar la capacidad para realizar investigación científica computacional de alto nivel en Latinoamérica, contribuimos al progreso y al éxito de la región".

Los coordinadores locales del proyecto, Dres. Orellana y Salinas, por su parte, agregaron que "una de las acciones más importante del proyecto es la concesión de becas de alto valor a cuatro estudiantes destacados de la USM. Estos estudiantes tendrán una experiencia extraordinaria al integrarse a equipos de investigación en las universidades socias del proyecto en Europa y, al volver a Chile, se reintegrarán al mundo académico, contribuyendo así al desarrollo de la comunidad científica nacional".

Al referirse a la importancia de este proyecto para la Universidad, los Dres. Orellana y Salinas destacaron que "el proyecto fortalecerá las relaciones entre la institución y universidades y centros de investigación del más alto nivel de Inglaterra, Francia, España, Brasil y México, dando la posibilidad de colaborar en proyectos de investigación a nivel internacional, además de profundizar relaciones y facilitar la presentación de resultados en conferencias internacionales organizadas como parte de este proyecto".

El proyecto, que involucra 10 instituciones de investigación en Europa y Latinoamérica, con una duración de 3 años, es financiado por la Comunidad Europea, dentro del Programa ALFA, que es un programa de cooperación entre Instituciones de Educación Superior de la Unión Europea y América Latina, cuyo objetivo es el desarrollo de un programa sistemático y permanente de colaboración entre instituciones de educación superior en Europa y América Latina.

El desarrollo de la Computación Científica y de los Sistemas Complejos en la USM se remonta a varios años y ha recibido el permanente apoyo de la Dirección General de Investigación y Postgrado (DGIP) del plantel por medio del financiamiento de varios proyectos de investigación.

Los Departamentos de Informática y Matemática, por su parte,
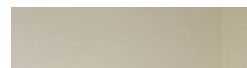
han contribuido notablemente al desarrollo de estas áreas. La DGIP y los Departamentos mencionados han financiado la visita de importantes científicos que trabajan en esta área, destacando entre ellos el Profesor Gregory Chaitin, del IBM Thomas J. Watson Research Center (New York), creador de la Teoría Algorítmica de la Información.

Los Dres. Orellana y Salinas vienen dictando desde hace varios años, la asignatura de Computación Científica en la USM, enfatizando en su docencia los temas científicos centrales del proyecto SCAT. Por otro lado, estos académicos también son miembros del Instituto de Sistemas Complejos de Valparaíso, cuyo Presidente es el Dr. Eric Goles y su Director Ejecutivo, el Dr. Adrián Palacios. En este marco, los Dres. Orellana y Salinas, en colaboración con el Profesor Chaitin y el Dr. Gonzalo Hernández, perteneciente al Centro de modelamiento Matemático de la Universidad de Chile, planean dictar la asignatura de postgrado "Teoría Algorítmica de la Información y Sistemas Complejos" durante el primer semestre lectivo 2006.

Cabe destacar que la coordinadora general del proyecto SCAT, Dra. Lorena Barba, estudió en la USM, donde obtuvo el título de Ingeniero Civil Mecánico y el grado académico de Magíster en la misma especialidad. Posteriormente obtuvo su doctorado en Dinámica de Fluidos en el Instituto Tecnológico de California (Caltech).

Publicado: 28 Dec 2005 por **dgc**

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USM desarrolla proyecto en Computación y Sistemas Complejos con universidades europeas

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científica computacional de alto nivel en Latinoamérica, contribuimos al progreso y al éxito de la región".

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Al referirse a la importancia de este proyecto para la Universidad, los Dres. Orellana y Salinas destacaron que "el proyecto fortalecerá las relaciones entre la institución y universidades y centros de investigación del más alto nivel de Inglaterra, Francia, España, Brasil y México, dando la posibilidad de colaborar en proyectos de investigación a nivel internacional, además de profundizar relaciones y facilitar la presentación de resultados en conferencias internacionales organizadas como parte de este proyecto".

El proyecto, que involucra 10 instituciones de investigación en Europa y Latinoamérica, con una duración de 3 años, es financiado por la Comunidad Europea, dentro del Programa ALFA, que es un programa de cooperación entre Instituciones de Educación Superior de la Unión Europea y América Latina, cuyo objetivo es el desarrollo de un programa sistemático y permanente de colaboración entre instituciones de educación superior en Europa y América Latina.

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EXPERTO PRESENTE EN EVENTO DE LA USM SE REFIRIÓ A NUEVOS DESAFÍOS DE LA INGENIERÍA INFORMÁTICA

(Miércoles 18 de Enero del 2006)

La informática es tal vez la disciplina más masificada del mundo, pues todo tiene una componente computacional, que permite mejorar los procesos y hacerlos con más eficiencia y eficacia. Por lo mismo, está en constante actualización y los desafíos para quienes optan por trabajar en esta área son crecientes y en permanente modernización.

El Dr. Marc Bouisset, profesor de la Universidad de Québec, Canadá, es uno de los expertos que se ha preocupado por este tema. Y se encuentra de visita en la Universidad Técnica Federico Santa María para participar en las II Jornadas de Formadores de Ingenieros en Computación e Informática que organiza el Departamento de Informática de la Universidad Técnica Federico Santa María (http://cfc-ici.inf.utfsm.cl).

Bouisset tuvo una destacada participación en el proyecto guía para el Software Engineering Body of Knowledge (SWEBOK), y en la confección del documento "Guide to the Software Engineering Body of Knowledge", cuyo propósito es proveer una caracterización consensualmente validada sobre la disciplina de la ingeniería de software y proveer un acceso a los tópicos del cuerpo de conocimientos que fundamentan la disciplina.

El experto canadiense señaló que "esta publicación surgió de un trabajo que hemos hecho a nivel internacional sobre lo que es la Ingeniería de Software, pues hay un cambio constante en la Informática, y en consecuencia, en el perfil de quienes trabajan en el área. Ello, porque evoluciona demasiado rápido, y por lo mismo, las otras disciplinas también tienen que desarrollarse con ella, porque la Informática está involucrada en todas, como la medicina, la astronomía o la física".

Explicó que "hoy en día la tendencia es que un ingeniero en Informática trabaje con más profesionales mancomunadamente y con otros informáticos de áreas especializadas como redes, software, sistemas distribuidos, etc. Pero también hay otras especialidades con las que tiene que relacionarse, como la parte de gestión de proyectos y de comunicación con clientes. Por ello, un ingeniero en informática no sólo debe ser bueno en informática o en ciencias básicas, sino también para diagnosticar problemas y para hablar con personas que no pueden explicar sus requerimientos o sus necesidades con lenguaje informático".

"Antes, el informático se creía dueño del computador y creía que lo sabía todo, pero hoy en día no es así, porque el cliente entiende más de Informática, y por ello el ingeniero debe escuchar, hablar y comprender al cliente y después transformar su necesidad en un sistema seguro, validado, verificado y que sea fácilmente mantenido, porque hay una lógica de evolución, tanto de parte del cliente como de las tecnologías que afectan al sistema", puntualizó.

Ayuda Memoria

Por ello, Bouisset elaboró el documento "Guide to the Software Engineering Body of Knowledge", que busca aglutinar en un solo texto las competencias que debiese tener todo ingeniero en software para desempeñarse competentemente en el mercado.

"Fue un proyecto para clasificar y definir todo lo que es Ingeniería de Software (IS), pero antes de llegar a este libro fueron 5 años de trabajo. La idea fue que los expertos en IS del mundo dieran sus opiniones sobre la disciplina, sus fortalezas, debilidades y diferencias y para ello fue necesario llegar a un consenso. Estas ideas fueron canalizadas por un grupo de editores, quienes añadieron sus comentarios y dieron vida a esta guía", explicó.

"Swebok, finalmente, es lo que es aceptado por todos los especialistas y hay también prácticas especiales, por ejemplo, para sistemas embebidos o para sistemas de salud. Este trabajo se divide en el software ingenieril y diversas áreas de conocimientos, como Mantenimiento y Testing y otras disciplinas como: Ingeniería en Computación, Ciencia de la Computación, Management, Matemáticas, Project Management, Software, Ingeniería en Sistemas, y otras que pueden ser usadas, pero que no son Ingeniería de Software propiamente tales".

No obstante, el trabajo no termina ahí. "Para cada una de las subáreas fue necesario dar una definición y probar que cada una de ellas y las definiciones que hemos dado son buenas y reconocidas, y que se trabajan en el mundo con éxito".

"El trabajo se editó en 2005 y hoy es una referencia, pues su aplicación se da en innumerables escenarios: la industria, el Gobierno, empleo, contratación de personal, negociación, planificación de carreras, educación, conferencias, investigación, publicaciones, etc. Lo novedoso de la guía, es que es absolutamente gratuita, y aunque está en formato duro, se puede descargar de la Internet en www.swebok.org. Hoy estamos tratando de traducirlo al francés y al castellano, pero ya tiene sus ediciones en japonés y chino", finalizó.

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Especial Universitarios

Universidad Santa María desarrolla proyecto en Computación y Sistemas Complejos con universidades europeas

28/12/2005

Tamaño de la letra: A+ A-

Culminando una fase del desarrollo de la Computación Científica y de los Sistemas Complejos, los académicos de la USM, Dres. Oscar Orellana y Luis Salinas, en colaboración con la Dra. Lorena Barba, ingeniero civil mecánico perteneciente a la Universidad de Bristol, presentaron el proyecto *"Scientific computing advanced training"*, recientemente aprobado por la Comunidad Europea por intermedio de la *"EuropeAid cooperation office"*.

Con el objetivo de profundizar en el conocimiento de la Computación Científica y los Sistemas Complejos, que constituyen hoy día áreas de intensa actividad de investigación, desarrollo y aplicaciones a sistemas de muy diversa naturaleza que incluyen la Ingeniería, la Economía y la Biología, los académicos de la **Universidad Técnica Federico Santa María**, Dr. Oscar Orellana, del Departamento de Matemática y Dr. Luis Salinas, del Departamento de Informática, en conjunto con la Dra. Lorena Barba, Ingeniero Civil Mecánico del plantel y PhD. en Aeronáutica, del Institute of Technology of California crearon el proyecto *"Scientific computing advanced training"*, SCAT.

La coordinadora europea del proyecto, Dra. Lorena Barba, explicó que "el proyecto SCAT se enfoca al campo de la computación de alto desempeño. Esto se entiende como un campo interdisciplinario que incorpora matemáticos, físicos, ingenieros, e incluso biólogos y otros científicos, y complementa la Ciencia de la Computación, poniendo el énfasis no sólo en la tecnología computacional propiamente tal, sino también en el uso de la Computación para la investigación científica y las aplicaciones de la Ingeniería de alto nivel".

En este sentido, la Dra. Barba señaló que "nuestro enfoque en la Computación Científica está basado en la idea de que la computación de alto desempeño, hoy en día es un elemento más de la investigación científica, junto con los métodos experimentales y analíticos, y el motivo de impulsar un proyecto de colaboración en esta materia. Es la convicción de que la Ingeniería y la Ciencia Computacional ya están jugando un papel dominante en los procesos de diseño en Ingeniería y el descubrimiento científico. Por lo tanto, al desarrollar la capacidad para realizar investigación científica computacional de alto nivel en Latinoamérica, contribuimos al progreso y al éxito de la región".

Los coordinadores locales del proyecto, Dres. Orellana y Salinas, por su parte, agregaron que "una de las acciones más importantes del proyecto es la concesión de becas de alto valor a cuatro estudiantes destacados de la USM. Estos estudiantes tendrán una experiencia extraordinaria al integrarse a equipos de investigación en las universidades socias del proyecto en Europa y, al volver a Chile, se reintegrarán al mundo académico, contribuyendo así al desarrollo de la comunidad científica nacional".

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Fuente: *Universidad Santa María*

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Amelia Earhart Fellow launches groundbreaking research project
Monday, January 9, 2006

Dr. Lorena Barba, a 1999 Amelia Earhart Fellow, secured a grant that will provide 20 scholarships for PhD students, in a collaboration project between Latin America and Europe.

A project aimed at improving understanding of how best to use computers in the field of scientific discovery is being launched by Bristol University in the United Kingdom.

The University has signed a three-year contract, worth around £900,000 (1.34 million Euro), with the European Commission to work with institutions across Europe and Latin America.

The Scientific Computing Advanced Training (SCAT) project will provide for 20 research scholarships worth around £11,000 (16,520 Euro) each.

A post-graduate mathematics student from Bristol University will have the chance to spend eight months in Brazil, Chile or Mexico as part of the project.

In addition, 16 students from Latin America will travel to partner institutions in the UK, Spain and France for extended periods of study, including four at Bristol.

"During the last 20 years or so, scientific computing has become an essential part of discovery and research, " said AE Fellow Dr. Lorena Barba, SCAT coordinator and lecturer in applied mathematics at the University of Bristol. "In particular, it is vital for the solution of problems that may be insoluble by theory and experiments alone, for example, the prediction of future climates. It is also an essential approach when laboratory studies may be hazardous, such as the use of toxic chemicals. It is also useful when traditional means become too expensive or time-consuming."

Dr. Barba, who went to Bristol from Chile four years ago, said that developments in

computers had also allowed more institutions access to powerful High Performance Computing (HPC) technology, such as those in Latin America partner countries.

A total of 10 institutions on both sides of the Atlantic are involved as part of the Networ for Advances in Computational Science and Engineering.

The project will also see a number of international workshops and meetings related to scientific computing take place in Europe and Latin America.

SCAT will be launched in February 2006 in Barcelona and the first workshop will take place at the Daresbury Laboratory in Warrington in June. There will be another worksho held in Chile in January 2007.

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EL DIARIO MAS ANTIGUO DE HABLA CASTELLANA EN EL MUNDO

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Una simbiosis perfecta

USM desarrollará un proyecto en conjunto con otras universidades para intercambiar conocimientos.

Construir un modelo matemático del puente más alto del mundo o hacer la simulación del transbordador espacial Challenger, es posible gracias a la computación científica y los sistemas complejos.

Se trata de la ciencia aplicada que se encarga de desarrollar los modelos matemáticos y computacionales de los procesos vinculados a los problemas científicos o tecnológicos de las ciencias naturales o de la ingeniería. Estos modelos sirven para manipular y controlar el problema real al que representan.

Así lo explica Oscar Orellana, docente de la Universidad Técnica Federico Santa María, y director en Chile, de un proyecto que reúne a diversas universidades extranjeras.

Nave espacial requirió modelo previo.

El proyecto en cuestión se denomina "Scientific Computing Advanced Training" (SCAT), y fue recientemente aprobado por la Comunidad Europea por intermedio de la "EuropeAid Cooperation Office".

"Nos sentimos realmente contentos de participar en esta iniciativa, porque es una experiencia rica de intercambio de conocimiento, no sólo para docentes, sino también para los alumnos, ya que cuatro estudiantes destacados recibirán becas de alto valor", comenta Orellana.

La coordinadora europea del proyecto, Dra. Lorena Barba, explicó que "el proyecto SCAT se enfoca al campo de la ingeniería y ciencia computacional. Esto se entiende como un campo interdisciplinario, que incorpora matemáticos, físicos, ingenieros, e incluso biólogos y otros científicos, y complementa la ciencia de la computación", afirma Barba.

CAMPUS DE TERRASSA
UNIVERSITAT POLITÈCNICA DE CATALUNYA

S'inicia al Campus de la UPC a Terrassa un programa internacional de computació científica avançada

A partir del proper 20 de febrer es posa en marxa, a l'Escola Tècnica Superior d'Enginyeries Industrial i Aeronàutica de Terrassa (ETSEIAT), el Scientific Computing Advanced Training (SCAT), un programa internacional de formació integrat per matemàtics, físics, enginyers i biòlegs de França, Anglaterra, Brasil, Xile, Mèxic i Espanya que treballaran per incorporar la computació científica a projectes d'enginyeria d'alt nivell i per ajudar a científics llatinoamericans a desenvolupar aquest àmbit de la tecnologia.

L'enginyeria i la ciència computacional han adquirit un paper essencial en tots els processos d'enginyeria i en el desenvolupament tecnològic. Tant és així que s'ha fet imprescindible per resoldre, per exemple, qüestions relacionades amb la predicció climàtica amb l'impacte i anàlisis de desastres naturals com els terratrèmols, amb l'origen de l'univers, amb la creació de nous materials, amb la solució a determinats problemes mediambientals o amb l'estudi dels sistemes planetaris.

De fet, la computació científica és particularment pràctica per a la resolució de problemes que són impossibles de solucionar amb enfocs teòrics, com ara la predicció del clima; o que són perillosos d'estudiar als laboratoris, com la caracterització química de productes tòxics; o que són massa cars d'estudiar amb mètodes tradicionals, com el disseny de nous materials o la optimització del comportament aerodinàmic de vehicles.

A més, amb els avenços en les tecnologies de micropocessadors i amb les tecnologies de xarxes, avui dia és molt mes fàcil explotar els recursos computacionals d'alt rendiment. Per tant, la capacitat per fer descobriments científics i desenvolupaments tecnològics mitjançant la simulació numèrica o computacional és una realitat

Per posar alguns exemples propers de recerca realitzada al Campus de Terrassa dins d'aquest àmbit , el Centre Tecnològic de Transferència de Calor de la UPC (CTT), ha treballat formulacions matemàtiques del càlcul i ha portat a terme simulacions numèriques que, per exemple, milloren els processos de combustió, reduint la formació de contaminats, o el rendiment d'equips d'aire condicionat, fent-los més ecològics i econòmics. Amb aquest tipus de càlculs o de simulacions numèriques es pot visualitzar els fluxos d'aire calent dins de qualsevol dependència tancada, de manera que un arquitecte o un enginyer ja pot comptar amb dades objectives per al disseny de qualsevol edifici des del punt de vista de l'optimització energètica.

El Programa SCAT

UPC

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LORENA BARBA MARTINIC PROFESORA E INVESTIGADORA DEL DEPARTAMENTO DE MATEMÁTICA DE LA UNIVERSIDAD DE BRISTOL

"Las computadoras permiten hacer ciencia con menos coste"

❍ Es miembro de un grupo internacional que realiza investigación por ordenadores de muy avanzada tecnología

❍ Considera que hay que incentivar la representatividad de la mujer en equipos científicos a través de becas y ayudas

Mercè Boladeras

Profesores e investigadores del campus de la Universitat Politècnica de Catalunya, que forman parte del Centre Tecnològic de Transferència de Calor (CTTC), participan en un programa internacional de computación científica avanzada que tiene como objetivo ofrecer formación a sus homólogos de Latinoamérica. El grupo de trabajo reúne a 35 científicos de Francia, Inglaterra, Brasil, Chile, México y España. Lorena Barba, de origen chileno y afincada en la ciudad inglesa de Bristol, explica en esta entrevista las aplicaciones de la computación científica, la situación de la tarea investigadora en Europa y Latinoamérica, así como la representatividad de la mujer en este campo.

Pregunta. ¿Qué debemos entender por computación científica?
Es una manera de hacer ciencia de forma multidisciplinar. Hay ingenieros, matemáticos, físicos, biólogos... Todos ellos se juntan para hacer investigaciones en un computador.
¿Qué ámbitos se investigan?
Habitualmente fenómenos que son muy complejos y costosos de estudiar en el laboratorio. Por ejemplo, si uno quiere hacer análisis de productos tóxicos es muy peligroso hacerlo en un laboratorio. Es mejor recurrir a la computadora. También se utiliza la computadora en ensayos sobre fenómenos climáticos.
¿Qué país lidera este tipo de investigación por computadora?
Estados Unidos, en este momento, tiene las computadoras y los equipos de trabajo más poderosos. Japón fue durante muchos años uno de los países más competitivos pero ahora ya no lo es tanto.
¿Y qué posición ocupa Europa?
Europa está realizando un esfuerzo muy importante por invertir en esta infraestructura y ponerla al servicio de la investigación científica. Las universidades, de momento, disponen de computadoras menos poderosas pero también son muy útiles para hacer simulaciones. El objetivo es sumar esfuerzos, acumular ciencia.
¿Cuál es la situación en Latinoamérica?
Compleja porque los países de allí tienen dificultades para financiar proyectos de este tipo. Pero este grupo de trabajo internacional sobre computación científica que hemos creado ahora implica a Chile, México y Brasil. En estos países hay un crecimiento importante de la comunidad científica y del interés de los gobiernos. Hay mucha gente que ha estudiado fuera, que ha obtenido su doctorado, que ha vuelto. Ahora hay una masa crítica de científicos dispuestos a trabajar.
¿Cuáles son las líneas de investigación

que se desarrollan en Latinoamérica?
Hay varios campos. Por ejemplo, en Brasil, la investigación está relacionada con el medio ambiente. En Chile se desarrollan proyectos financiados por la industria minera. En México hay también investigación relacionada con la industria petrolera.
¿Y cómo ayudará la computación?
Puede ayudar muchísimo. Porque hoy día la estructura computacional requiere una inversión más baja que la que se necesita para crear un laboratorio. Es más fácil que las universidades tengan computadoras paralelas y estén conectadas en red. Y esto hoy día está al alcance de Latinoamérica. Sólo falta más formación.
¿Cuáles son las vías de financiación?
Básicamente son los gobiernos pero también hay industrias. En México, por ejemplo, la industria petrolera y minera financian alguna parte de la investigación universitaria. Son industrias que tienen recursos económicos y que necesitan de nueva tecnología. Pero en mi opinión también es importante hacer investigación de forma independiente a las industrias por el bien de todos. En este sentido creo que los gobiernos siempre deben estar interesados en las cuestiones científicas.
¿Y los gobiernos se implican?
La situación económica está mejorando en el país y empieza a haber apoyo. En este programa de computación se ha implicado la Oficina de Cooperación Internacional en Latinoamérica. Deben tomar conciencia de que hay que fortalecer a los científicos porque ello contribuye al desarrollo económico de la región.
En este contexto, ¿cuál es la representatividad de la mujer científica en Latinoamérica?
Lo tiene difícil pero no más que en Europa. En Inglaterra, mi experiencia es que la proporción de investigadoras es baja. También en Francia, donde las mujeres siguen teniendo dificultades para tomar una decisión sobre su futuro profesional, según se desprende de la conversación que tuve con una de las socias científicas que trabajan en París. Sólo hay que ver nuestro grupo de trabajo. Somos 35 científicos y el porcentaje de mujeres no llega al diez por ciento.
¿Cómo se puede incentivar la participación de la mujer?
Este proyecto tiene un programa de veinte becas, cada una de ellas está dotada con dieciséis mil euros cada una. Queremos hacer todo lo posible para conceder estas becas a las mujeres jóvenes, que puedan ser potenciales aplicantes y darles apoyo. Porque, a veces, las jóvenes tiene miedo de dejar su hogar. Pero viajar a Europa y pertenecer a un grupo internacional de investigación puede cambiar la vida a una persona, que está pensando

en labrarse un futuro profesional como científica.
¿Por qué se fue usted de Chile a Estados Unidos y después a Inglaterra?
Me fui para estudiar de Chile a Estados Unidos para mejorar. Tuve la fortuna de recibir una oferta del Instituto Tecnológico de California, el mejor del mundo. Era una experiencia que nunca hubiera podido tener en Chile.
¿Por qué?
El Instituto Tecnológico de California es una universidad privada como muchos recursos y se realiza investigación muy avanzada y a muy alto nivel. Por ejemplo, este instituto es el que administra el laboratorio de propulsión a chorro de la NASA.
¿En Chile no había más caminos por explorar?
En Chile, donde estudié Ingeniería Mecánica, sentí que había llegado a un tope y que mis conocimientos quedaban estancados. Por cierto, fui la única mujer de mi promoción formada por treinta alumnos. Pues, cuando finalicé, dirigí mi carrera hacia la investigación, en descubrir cosas. Me salió la oportunidad de América. Allí me di cuenta de que el techo de conocimientos estaba en el infinito y que me quedaban muchas cosas por aprender.
¿Y sigue aprendiendo en la Universidad de Bristol, en Inglaterra?
Ya lo creo. Una persona nunca termina de enseñar ni de aprender cosas nuevas. Y esto es lo que un profesor quiere transmitir a sus alumnos, a la gente joven. Por eso es importante que gente que hace investigación y que disfruta con ella pueda contagiar su entusiasmo a la gente joven.
¿Cuál es su sueño?
A mí me gustaría hacer alguna contribución a la ciencia, en equipo, y que este logro sea un progreso para la humanidad.
¿En algún campo?
Mi campo es la aeronáutica y en concreto, las turbulencias. Investigo cómo se puede reducir el impacto de las turbulencias que generan las aeronaves. También me interesa mucho los efectos de las hélices de los motores de los aviones comerciales. Me gustaría mucho hallar soluciones para reducir el impacto medio ambiental.

Lorena Barba realiza investigación en aeronáutica. RICARD DOMÈNECH

Europa y Latinoamérica

Las Tecnologías de la Información y de la Comunicación (TIC), y sobre todo las ayudas transnacionales, permiten cada vez más abrir grupos y líneas de trabajo de carácter internacional y multidisciplinar. En este escenario es donde se ha formando el grupo Scientific Computing Advanced Training (SCAT), que reúne a científicos en computación aplicada de Francia, Inglaterra, Brasil, Chile, México y España. El objetivo del programa es que los investigadores europeos puedan formar a sus homólogos de Latinoamérica para que éstos últimos puedan desarrollar la computación científica aplicada en su país. El equipo es plural. Intervienen matemáticos, físicos, ingenieros y biólogos, lo que contribuye a realizar ciencia "acumulativa" -así se le denomina- en pro de un proyecto que, al final de

PROYECTO SCAT

su recorrido, puede ser de enorme calado. Los científicos trabajan en su universidad y desde su computadora para después intercambiar la información. De este proyecto forma parte el Centre Tecnològic de Transferència del Calor (CTTC) del campus de la Universitat Politècnica de Catalunya (UPC) en Terrassa. Este laboratorio de investigación es de los más destacados en estudios sobre la temperatura y la transferencia de aire frío o cálido en base al sistema de fórmulas matemáticas y ensayos simulados. Además del CTTC de Terrassa, el grupo está integrado por la Universidad de Bristol, Universidad Pierre i Marie Curie de París, Universidad de Marsella y el Laboratorio de Computación Daresbury (Inglaterra).

Voz de jazz

Nacida en Valparaíso (Chile) en 1966, Lorena Barba Martinic es doctora en Ingeniería Mecánica por la Universidad de Santa María de Valparaíso y doctora en Aeronáutica por el Instituto de Tecnología de California. Desde 2004 es profesora e investigadora de la Universidad de Bristol (Inglaterra), donde está adscrita al departamento de Matemáticas.

PERFIL

Señaló que en su visita a Terrassa halló dos felices coincidencias. Una, la aeronáutica -estudios que se ofrecen en el campus de la UPC en Terrassa y dos, el jazz. En el campo musical contó que es cantante de un grupo de jazz en Bristol y que recibe clases privadas para aprender y cuidar su voz. "El jazz es una carrera más difícil que la ingeniería", consideró la científica chilena.

UNIVERSIDAD > FORMACIÓN EN EL CAMPUS DE LA POLITÈCNICA

La computación científica, a examen en la UPC

Participantes en el seminario científico. JORDI SEGARRA

❯ Participan científicos de diferentes disciplinas de Europa y Lationamérica

Redacción

Desde ayer y hasta el próximo jueves, el campus de la Universitat Politècnica de Catalunya (UPC) acoge un seminario in-

ternacional de computación científica avanzada. Se trata de un programa de formación integrado por matemáticos, físicos, ingenieros y biólogos de Francia, Inglaterra, Brasil, Chile, México y España, que trabajan para incorporar la computación científica en proyectos de ingeniería de alto nivel y para ayudar a científicos latinoamericanos a desarrollar este ámbito de la tecnología.

La ingeniería y la ciencia computacional han adquirido, según los analistas, un papel esencial en todos los procesos de ingeniería tecnológica. En este sentido cabe destacar que se ha hecho imprescindible para resolver, por ejemplo, cuestiones relacionadas con la predicción climática como el impacto y análisis de desastres naturales como los terremotos; con el origen del universo; con la creación de nuevos materiales; con la solución de determinados problemas medioambientales o con el estudio de sistemas planetarios.

Para poner un ejemplo próximo, el Centre de Tecnologia de Transferència de Calor de la UPC, en Terrassa, ha trabajado formulaciones matemáticas de cálculo y ha llevado a cabo simulaciones numéricas que mejoran los procesos de combustión, reduciendo la formación de contaminantes o el rendimiento de equipos de aire acondicionado, consiguiendo que sean más ecológicos y económicos.

Joël Frelat, Agnès Maurel, and Christophe Josserand appear in this photograph, with the piece about the SCAT meeting in Barcelona which was published in *Diari de Terrassa* on the 21st of February, 2006.

Ciència ▶ Programa SCAT, al Campus de Terrassa

La UPC inicia amb més centres un programa de computació científica

REDACCIÓ · terrassa

A partir d'avui i fins divendres, es posa en marxa a l'Escola Tècnica Superior d'Enginyeries Industrial i Aeronàutica (ETSEIAT), un programa internacional de computació científica avançada.

El Scientific Computing Advanced Training (SCAT), que s'inicia avui al Campus de la UPC, és un programa internacional de formació integrat per matemàtics, físics, enginyers i biòlegs de França, Anglaterra, el Brasil, Xile, Mèxic i Espanya, que treballaran per incorporar la computació científica a projectes d'enginyeria d'alt nivell, i per ajudar els científics llatinoamericans a desenvolupar aquest àmbit de la tecnologia.

El fet és que l'enginyeria i la ciència com-putacional han adquirit un paper essencial en tots els processos d'enginyeria i en el desenvolupament tecnològic. Tant és així que s'ha fet imprescindible per resoldre, per exemple, qüestions relacionades amb la predicció climàtica o amb l'impacte i anàlisi de desastres naturals com els terratrèmols.

La constitució del programa SCAT pretén ajudar al desenvolupament de la computació científica d'alt nivell als països participants i, d'altra banda, atraure oportunitats i fons addicionals a les universitats i grups de recerca europeus que hi participen: el Centre Tecnològic de Transferència de Calor de la UPC, la Universitat de Bristol, la Universitat Pierre i Marie Curie de París, la Universitat de Marsella i el Laboratori de Computació Daresbury, a Anglaterra. A més, el projecte SCAT farà possible que vint estudiants llatinoamericans puguin finançar-se una estada de vuit mesos en algunes de les universitats europees associades amb les respectives beques atorgades per al desenvolupament dels seus projectes d'investigació. Això suposarà que aquests estudiants podran estar en contacte amb els grups de recerca líders en aquesta àrea científica.

Article in the Calalan language *Mésterrasa* appearing on 20 February 2006 to announce the SCAT Launch meeting.

Perfiles magazine of Universitat Politécnica de Catalunya.

Investigación

Manuel Martínez-Sánchez, en la ETSEIAT

«La técnica aerospacial es con frecuencia punta de lanza para impulsar avances en muchas otras áreas. Es entonces, muy positivo que la ETSEIAT haya dado el paso de incorporar esta área a sus estudios de ingeniería»

Manuel Martínez-Sánchez, es profesor e investigador de aeronáutica y astronáutica del Departamento de Aeronáutica y Astronáutica del Massachussets Institute of Technology (MIT), Cambridge. Su especialidad es la propulsión espacial, la física de fluidos y los sistemas para el espacio. Colabora con la dirección de la ETSEIAT en la programación de los grupos de la titulación de Ingeniería Aeronáutica.

Dentro de este campo, es un científico de prestigio internacional, reconocido en el ámbito de la magnetohidrodinámica, sistemas para el espacio, propulsión para cohetes y turbomáquinas. Se centra en los problemas interactivos relacionados con la propulsión y la energía que generan los sistemas de las naves espaciales. Ha publicado más de cien artículos en congresos. Paralelamente, desde el año 1974 imparte docencia en la MIT en las áreas de propulsión y energía. Más información en: http://web.mit.edu/dept/aeroastro/www/labs/SPL/research.htm

Programa Internacional de Computación Científica Avanzada en la ETSEIAT

Del 20 al 24 de Febrero se celebró en la ETSEIAT el Scientific Computing Advanced Training (SCAT), organizado por el CTTC (Centro Tecnológico de Transferencia de Calor de la UPC).

La jornada estaba formada por matemáticos, físicos, ingenieros i biólogos de Francia, Inglaterra, Brasil, Chile, México y España que trabajaron para incorporar la computación científica a proyectos de ingeniería de alto nivel y para ayudar a científicos latinoamericanos a desarrollar éste ámbito de la tecnología. El proyecto SCAT también hace posible que veinte estudiantes latinoamericanos puedan financiarse una estancia de ocho meses en algunas de las universidades y centros europeos asociados y trabajar en el desarrollo de proyectos de investigación.

Para más información: http://www.cttc.upc.edu

Internacional

Nuevo Master: **Construction Project Management**

La ETSEIAT conjuntamente con la Facoltà di Architettetura e Facoltà di Economia delle Università degli Studi di Firenze ofrece desde este curso académico un nuevo Master Internacional en Construction Project Management. Un curso de postgrado dirigido a formar profesionales en la coordinación, la dirección y la gestión de proyectos y obras, especialmente de edificación. El master es un complemento especialmente dirigido a los estudios de Ingeniería Industrial y Arquitectura, aunque se permite acceder desde otras titulaciones de grado, primer o segundo ciclo. La duración del master va desde Enero a Diciembre, y se imparte en la Escuela Técnica Superior de Ingenierías Industrial y Aeronáutica de Terrassa y en la Università degli Studi di Firenze (Italia).

Para más información: http://www.etseiat.edu

Later page of *Perfiles* magazine with a piece about the SCAT launch meeting.

Formar científicos y humanistas del más alto nivel, misión del posgrado

Hilda Colín García

Promover los programas de posgrado entre alumnos de licenciatura, impulsar la movilidad estudiantil y la participación en proyectos de colaboración nacionales e internacionales son algunos de los objetivos de la Secretaría de Posgrado, a cargo del doctor Vladimir Tchijov

El posgrado constituye la principal estrategia para la formación de científicos y humanistas del más alto nivel y representa la cúspide del proceso educativo en la Universidad Nacional Autónoma de México.

En el posgrado se conjugan la enseñanza y la investigación con el propósito de contribuir al desarrollo de la ciencia, la tecnología, las humanidades y las artes para así coadyuvar a la solución de los problemas del país.

Para el doctor Vladimir Tchijov, secretario de Posgrado de la Facultad de Estudios Superiores Cuautitlán, en la UNAM en general y particularmente en la FESC se debe mantener el mejor sistema educativo del país en cuanto a calidad, diversidad y en respuesta a los requerimientos de la investigación, la educación superior y los sectores productivo, social y gubernamental.

El doctor Tchijov explicó las estrategias que seguirá el área a su cargo para llevar a buen término los objetivos planteados, entre ellas establecer convenios de cooperación con instituciones de educación superior de diferentes estados del país y del extranjero; participar en proyectos internacionales de colaboración; promover la movilidad estudiantil; promocionar y difundir las oportunidades de ingreso al posgrado y aumentar el número de alumnos de este nivel educativo, entre otros.

Además, como una labor importante de fortalecimiento de los programas de posgrado que se imparten en esta unidad multidisciplinaria, la administración encabezada por la doctora Suemi Rodríguez Romo tiene el interés de promover la cooperación entre los posgrados e impulsar convenios con otras instituciones.

También se prevé participar en la adecuación de los planes de estudios al nuevo Reglamento General de Estudios de Posgrado, el cual está en proceso de aprobación por el Consejo Universitario. Entre los propósitos está incrementar el número de tutores entre los académicos de la Facultad para estar en posibilidades de cubrir mayor número de áreas de conocimiento de los posgrados y hacer más atractivo a los alumnos elegir a sus tutores de maestría y doctorado en la FES Cuautitlán.

La ubicación geográfica de la Facultad con respecto a Ciudad Universitaria se convierte en un factor de atracción para aspirantes al posgrado que viven en la zona norte del valle de México y áreas colindantes.

Para fortalecer el posgrado en la FESC, el doctor Vladimir Tchijov destacó la importancia de promoverlo al máximo con las siguientes acciones: difundir la información de los posgrados en que participa la FESC y los de la UNAM en general en la zona norte del valle de México y áreas circunvecinas; motivar a los egresados de licenciatura para que se interesen en continuar estudiando maestrías y doctorados; mantener comunicación y cooperación permanentes entre las coordinaciones de las carreras de la FESC y las áreas afines del posgrado; organizar reuniones con alumnos de los últimos semestres y pasantes de licenciatura a fin de informarlos sobre las posibilidades de ingreso al posgrado; realizar reuniones entre tutores del posgrado y alumnos para que éstos conozcan mejor las áreas de investigación que pueden elegir para sus tesis; organizar cursos propedéuticos para los exámenes de admisión; realizar jornadas de posgrado con participación activa de los alumnos de licenciatura a fin de motivarlos a elegir un posgrado como una opción atractiva para su formación profesional y personal; involucrar a los alumnos de licenciatura a partir del quinto o el sexto semestre, según su nivel de preparación, en labores de investigación dentro de los proyectos que llevan a cabo los tutores de los posgrados, y motivar a los estudiantes de licenciatura a participar en congresos científicos nacionales para sumergirlos en la atmósfera de la investigación de alto nivel y así impulsar su ingreso al posgrado.

También se prevé dar seguimiento personalizado al desarrollo académico de los alumnos de posgrado con el objetivo de aumentar la eficiencia terminal.

De igual manera, se promoverá la movilidad estudiantil dentro de los programas establecidos por la Dirección General de Estudios de Posgrado y se establecerán convenios de cooperación con instituciones de educación superior de diferentes estados del país y del extranjero, según lo estipulado en el Acuerdo del Rector de la UNAM sobre Programas de Posgrado Compartidos.

También se contempla participar en proyectos internacionales como el *Scientific Computing Advanced Training Project*, con sede

en la Universidad de Bristol, Inglaterra, en el que colaboran en el área de cómputo científico universidades de la Unión Europea y de América Latina, entre ellas la FESC, lo que abre posibilidades a los alumnos de posgrado de lograr estancias de investigación en las mejores escuelas de ambas regiones.

Establecer e impulsar convenios de cooperación, promover la movilidad estudiantil y participar en proyectos internacionales de colaboración permitirá usar al máximo el potencial de los académicos de la FESC en el posgrado e involucrar a los alumnos de este nivel educativo en investigaciones del más alto nivel.

Para cumplir las metas propuestas por esta administración, la Secretaría de Posgrado tiene una nueva estructura con secretarios técnicos por cada programa de posgrado que se imparte en la FESC, personas con amplia experiencia académica en su área, egresados de sus respectivos posgrados, quienes conocen de cerca las problemáticas del ramo, elementos con los que se pretende eficientar el funcionamiento del posgrado.

Semblanza

Vladimir Tchijov es originario de Moscú, Rusia, y naturalizado mexicano. Estudió la licenciatura en Matemáticas Aplicadas en la Facultad de Matemáticas y Mecánica de la Universidad Estatal de Moscú, donde logró mención honorífica y posteriormente se doctoró en Ciencias Fisicomatemáticas.

Durante 18 años trabajó en el Departamento de Matemáticas del Instituto de Física e Ingeniería de la capital rusa.

Llegó a México en 1995 a propuesta de la doctora Suemi Rodríguez Romo, quien lo invitó a colaborar en la Cátedra Patrimonial del Conacyt nivel II, que se desarrolló en la Facultad de Estudios Superiores Cuautitlán, donde actualmente se desempeña como profesor titular "C" de tiempo completo definitivo con nivel D del PRIDE.

Actualmente es miembro del Sistema Nacional de Investigadores nivel II, miembro de la Comisión Dictaminadora de Matemáticas de la FESC y representante de la directora ante el Comité Académico del Posgrado en Ciencias e Ingeniería de la Computación.

Sus áreas de investigación giran en torno a matemáticas aplicadas a problemas de fisicoquímica y contaminación ambiental.

Como investigador ha sido responsable de diversos proyectos PAPIIT en modelación matemática y computacional de sistemas multifásicos y multicomponentes y en problemas de ambiente.

Es autor de más de 40 artículos publicados en revistas de circulación internacional, en 1994 fue premiado por el *Journal of Applied Mechanics and Technical Physics*, por el mejor artículo científico.

En la FESC ocupó el cargo de jefe del Centro de Investigaciones Teóricas y fue representante de los tutores ante el Comité Académico del Posgrado en el programa de Ciencia e Ingeniería de la Computación, asi como miembro de la Comisión Revisora del PRIDE en el área de Ciencias Fisicomatemáticas y de las Ingenierías.

Actualmente asesora a ocho alumnos, tres de maestría y cinco de doctorado, de los cuales tres ya son candidatos a doctores. ©

chos niños en nuestro país. Comentó, el autor de la obra, Felipe Galván, muestra una preocupación latente por el abuso y el maltrato infantil, así como por los problemas familiares y sociales (alcoholismo, drogadicción y pobreza) que crean un círculo vicioso.

En cuanto a la repercusión del texto en la dramaturgia mexicana, explicó que una de las aportaciones más importantes es la denuncia de la indiferencia de la sociedad actual, con un argumento que capta nuestra atención y nos invita a cambiar nuestra actitud frente a estos problemas.

El grupo teatral *Peripecias* se formó en 1994 con alumnos de la Escuela Nacional Preparatoria Número 9, que en ese momento cursaban la asignatura de teatro; sus integrantes han realizado diversos montajes que van desde clásicos como *La fierecilla domada*, de William Shakespeare, hasta contemporáneos del teatro mexicano como *El gesticulador*, de Rodolfo Usigli, sin olvidar las tradicionales pastorelas. ℂ

Participa la FESC activamente en el proyecto SCAT

Vanessa Joachin Bolaños

La computación científica es un campo multidisciplinario de estudios relacionados con la construcción de modelos matemáticos y las técnicas de solución numérica, que consiste en el uso de computadoras para analizar y resolver problemas científicos y de ingeniería. A nivel práctico, se utiliza en la aplicación de simulación computacional y otras ramas de la informática, ya que está diseñada para resolver problemas que surgen en distintas disciplinas, cuyo propósito es promover el descubrimiento científico.

Siendo distinta de las formas tradicionales de la ciencia y la ingeniería, en el campo teórico y experimental, la computación científica se basa en modelos matemáticos ejecutados en un *software* apropiado capaz de producir predicciones con respecto al comportamiento de los sistemas representados por los modelos. La ventaja de la computación científica se hace evidente cuando se utiliza para estudiar los problemas que han llegado a ser insuperables por métodos analíticos o son imposibles de estudiar por medio de experimentos. El resultado es una herramienta de gran alcance que se puede ocupar para el descubrimiento científico y el diseño de ingeniería en los más diversos usos.

La computación científica, por lo tanto, cada vez desempeña un papel más dominante en los procesos del descubrimiento científico y del diseño de ingeniería, por lo que es necesario aumentar el nivel de entrenamiento de investigadores jóvenes, que es uno de los objetivos del proyecto SCAT.

El SCAT (*Scientific Computing Advanced Training*) es una iniciativa de colaboración internacional para el adelanto de la computación científica en Europa y América Latina, reuniendo a especialistas en matemáticas aplicadas, ingeniería e informática.

Entre los objetivos del SCAT se encuentran:

▶ Consolidar la colaboración entre las instituciones de educación superior y la investigación que provoca el acelerado avance en la tecnología y uso de la computación científica en la ciencia y la ingeniería.
▶ Preparar a los estudiantes de maestría y doctorado en los métodos y usos de la investigación del cómputo avanzado.
▶ Reunir a los grupos de investigadores para que desarrollen una sinergia y visión común en el uso de la computación científica para la producción de investigación de calidad.
▶ Accionar las iniciativas para fomentar la investigación de cómputo avanzado en las instituciones de educación superior en Latinoamérica y promover intercambios con instituciones europeas.

"El proyecto —apuntó el doctor Vladimir Tchijov, secretario de Posgrado de la FES Cuautitlán y participante del plan — es cofinanciado por el programa europeo ALFA; la meta es el desarrollo de una colaboración sistemática y duradera entre las instituciones de educación superior en Europa y América Latina, contribuyendo al desarrollo económico y social, regional y nacional".

"El proyecto SCAT tiene como propósito el desarrollo de una colaboración sistemática y duradera entre las instituciones de educación superior en Europa y América Latina, contribuyendo al desarrollo económico y social, regional y nacional", resaltó el doctor Vladimir Tchijov, secretario de Posgrado de la FES Cuautitlán

EL SCAT reúne a 10 instituciones de investigación: Universidad de Bristol y Laboratorio de Daresbury, en Inglaterra; Escuela Superior de Física y Química Industrial, Universidad de Pierre y Marie Curie (Paris VI), Instituto de Investigación y Fenómenos de Equilibrio, en París; Universidad Politécnica de Cataluña, en España; Universidad de Chile, Universidad Técnica "Federico Santa María", en Chile; Instituto Nacional de Matemática Pura y Aplicada, en Brasil y la Universidad Nacional Autónoma de México, y también participan el Instituto de Investigaciones en Matemáticas Aplicadas y Sistemas, el Instituto de Geofísica y la Facultad de Estudios Superiores Cuautitlán.

"Los grupos de científicos tienen diversas áreas de interés, algunos de ellos poseen más experiencia en la investigación de cómputo o realizan experimentos y estudios teóricos, otros están implicados en el uso de la ingeniería. Esta combinación multidisciplinaria es crucial en el área de la computación científica", externó el secretario de Posgrado de la FESC.

Las actividades de entrenamiento para el proyecto SCAT giran alrededor del cómputo en ciencias aplicadas e ingeniería, como un elemento de la investigación científica comparable a los experimentos o al análisis. En este proyecto se mantiene una visión equilibrada necesaria entre las nuevas tecnologías, los experimentos y las matemáticas que sirven para hacer investigación de alta calidad.

El proyecto SCAT ofrece concesiones a estudiantes de maestría y doctorado de la UNAM que realizan investigaciones en el área de la computación científica, así como a los posdoctorados, para pasar periodos de estudio e investigación en universidades europeas participantes en el SCAT; los becarios seleccionados de América Latina contactarán algunos de los mejores grupos de investigación de Europa para promover así la colaboración internacional.

Igualmente se realizan reuniones internacionales tres veces por año, lo que proporciona un foro para la discusión y colaboración en las áreas científicas de interés: investigación de cómputo avanzada, modelado matemático, mecánica de sólidos, física no lineal, microfluidos, etc.

Finalmente el doctor Tchijov comentó que en la UNAM, las personas acreditados por el SCAT que participan activamente en el programa son la doctora Suemi Rodríguez Romo, directora de la FESC, la doctora Susana Gómez Gómez y el doctor Ismael Herrera Revilla, así como él mismo, quienes realizan investigaciones en el área y promueven los proyectos realizados en la UNAM con la finalidad de mejorar la calidad de la investigación científica en nuestro país. ☞

Universidad Nacional Autónoma de México
Facultad de Estudios Superiores Cuautitlán
Coordinación de Extensión Universitaria
Departamento de Educación a Distancia

UNAM CUAUTITLÁN

Educación a Distancia

Invita a
Videoconferencias
de la
EMA
Entidad Mexicana de Acreditación

CONFERENCIA	FECHA/HORARIO	PONENTE	MODALIDAD
Evaluación de la conformidad	Viernes 20 de octubre 11:00-13:00	Maribel López Martínez EMA	Transmisión desde el Instituto Politécnico Nacional
Firma del MLA del ILAC e IAF	Viernes 24 de noviembre 11:00-13:00		Transmisión desde el Instituto Politécnico Nacional

➜ **Lugar:** Unidad de Seminarios, Campo Cuatro

➜ **Dirigido a:** Estudiantes y académicos de las áreas de ingeniería, química, física, ciencias económico-administrativas, ciencias agrícolas y ambientales.

➜ **Objetivo:** Dar a conocer los elementos de información clave asociadas al desempeño del Sistema Nacional de Evaluación.

➜ **Organiza:** Entidad Mexicana de Acreditación (EMA) a través del Instituto de Ingeniería y el Centro de Física Aplicada y Tecnología Avanzada, UNAM.

INFORMES

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Diseño JOD06

Supercomputers to transform science

The installation of three supercomputers is set to turbocharge the University's scientific research, offering new insights into the structure of space and time, climate modelling, the design of novel drugs and many other areas. At peak performance, the multi million-pound high-performance computers (HPCs) will carry out over 13 trillion calculations per second. This is equivalent to the entire population of the world working simultaneously on hand-held computers for around three hours.

Professor Steve Wiggins, Head of Mathematics and a co-instigator of the project, commented that: 'HPC has ascended to a new level of importance. Any university that aspires to be world-class must have this basic research
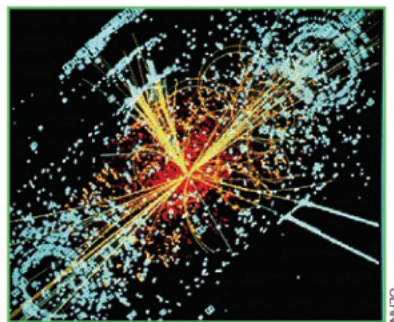
infrastructure. In future HPC will be an indispensable tool in every good researchers' toolbox.'

The largest of the three HPCs will be one of the fastest university research computers in the UK, and is expected to be one of the top 100 computers of its type in the world.

New centre for complexity sciences

A new centre that will link mathematics, statistics and computer science with engineering, life and molecular sciences will be launched next year. The Bristol Centre for the Complexity Sciences, a joint initiative between the Departments of Mathematics, Engineering Mathematics and Computer Science, will provide an integrated research and training and environment. Between ten and 15 students will be recruited each year for a MRes/PhD graduate training programme. The centre has been funded with a £4 million grant from the Engineering and Physical Sciences Research Council.

As we enter the 21st century, mathematics is assuming a central role in a broad range of subjects in science, engineering and business, and in society in general. The impact of mathematics on people's day-to-day life is expanding at an ever-increasing rate. This was recognised in *BusinessWeek* online, which ran the cover story 'Math will rock your world', stating that 'it's a magnificent time to know math'.

It is a magnificent time to be studying mathematics at Bristol. Our students are a crucial part of our success. Last year was a record year for numbers of undergraduate applications to study mathematics, which topped 2,000 for the first time.
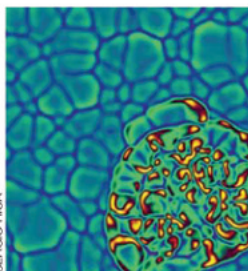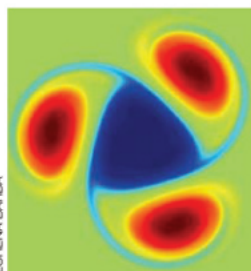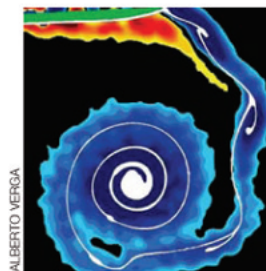
We all benefit by teaching and learning in a research-intensive environment. In these pages you will read how Bristol mathematics is at the forefront of research in pure and applied mathematics and is leading initiatives throughout the University.

Professor Steve Wiggins
Head of Mathematics

ALBERTO VERGA

LORENA BARBA

SERGIO RICA

Scattering knowledge

There are now three ways of doing science. For centuries scientists have made discoveries by means of *experiments* and *analytical thinking*, but in the past few decades science had aquired a new partner: *computer simulation*. Dr Lorena Barba (pictured left), from the Department of Mathematics, is leading a project to train young scientists from developing countries in this new way of working.

SCAT (Scientific Computing Advanced Training) is a ground-breaking research project aimed at improving understanding of how best to use computers in the field of scientific discovery and engineering design. It is a collaborative initiative, bringing together Universities from Europe and Latin America to train scientists in this field.

Funded by EuropeAid, it will provide for 20 research scholarships worth around £11,000 each. A postgraduate mathematics student from Bristol will have the chance to spend eight months in Brazil, Chile or Mexico as part of the project. In addition, 16 students from Latin America will travel to partner institutions in the UK, Spain and France for extended periods of study, including four here at Bristol.

The first two students started their placements in Bristol this September. Felipe Cruz from Chile is working with Dr Barba on the implementation of fast

particle methods and Hulmut Wahanik from Brazil is studying objects that appear in fluid flows where a number of eddies form a tight constellation and rotate together.

In addition to the scholarships, SCAT will organise a number of international workshops related to scientific computing and develop online materials for self-learning. SCAT was launched in Barcelona in February and the first workshop took place at the Daresbury Laboratory in Warrington in June.

Dr Barba said: 'For all these aspiring scientists the opportunity to join a research group in Europe, have the mentoring and guidance of established international leaders in their fields, and have the chance to do hands-on computational science in world-class facilities, will be life-changing. They will go back to their countries having developed collaborations that will help their career for years to come.'

NSQI

A Centre for Nanoscience and Quantum Information is being built by the University and mathematicians have a central role to play.

Professor Noah Linden from the Department of Mathematics is leading the project to build the £10.4 million centre, which will be truly interdisciplinary, bringing together biologists, chemists, computer scientists, engineers, mathematicians and physicists, among others.

Mathematicians form part of the Quantum Information Theory Group and the new centre will provide a physical focus for this group, which is one of a handful of elite groups worldwide. The group has helped to found the new field of quantum information science and has made fundamental contributions to the theoretical areas of the subject.

Mathematics also has a vital role in nanoscience. The department is developing a concentrated research programme in the field of 'nano-maths': theory, modelling and simulation in nanoscience. New areas of research in mathematics have sprung up around such topics as nano- and micro-fluidics and quantum devices. Without new, robust tools and models for quantitative description at the nanoscale, the research community will miss important scientific and technological opportunities.

It is also expected that the new Centre for Complexity Sciences will be very closely associated with this building.

Dr Lorena Barba

SCATtering knowledge

There are now three ways of doing science. For centuries scientists have made discoveries by means of *experiments* and *analytical thinking*, but in the past few decades they have acquired a new partner: *computer simulation*. Dr **Lorena Barba**, from the Department of Mathematics, is leading a project to train young scientists from developing countries in this new way of working.

It is safe to say that computer simulations are playing an increasingly dominant role in the process of scientific discovery. The computer is a virtual laboratory where we can study what happens at both the smallest scales – atoms, molecules, proteins – and at the largest scales – the Earth's atmosphere, the stars, and galaxies. Every discipline now benefits from scientific computing, and computational excellence is the key not only to a research institution's success, but also to the community's.

With the installation of three supercomputers, the University will soon be at the forefront of High-Performance Computing. The largest of these computers will be the fastest university-owned computer in the UK and among the top 100 in the world. But these new facilities will not just benefit the University, they will also help the developing world.

In addition to the mobility grants, the SCAT project organises international scientific workshops and it is undertaking both e-learning initiatives as well as distance collaboration assisted by technology. These actions, underpinned by the goal of improving the expertise of young scientists in scientific computing, have a beneficial effect in all partners. For the University of Bristol, leading such a project increases its international standing and influence. It will also benefit from long-term professional relationships, increased collaboration, and the enriching nature of the visitor programme.

Dr Lorena Barba is the instigator and current co-ordinator of the SCAT project. She grew up in Chile during the dictatorship and obtained her first degree in mechanical engineering. During that time she became interested in fluid mechanics and in research, but her options were limited,

The University will soon be at the forefront of high-performance computing

SCAT, which stands for Scientific Computing Advanced Training, is founded on the idea that co-operation in higher education is a means of fostering economic and social progress and, in the end, improving lives. The specific aim is to improve the conditions of training of highly qualified individuals in a skill that will undoubtedly play a dominant role in the future of scientific discovery and engineering design. The SCAT project is funded by EuropeAid and it will provide 20 high-value mobility grants for postgraduate students to spend a period of study and research in a partner institution. The European partners are in France, Spain and the UK, while the Latin American partners are in Brazil, Chile and Mexico.

so Dr Barba is not unfamiliar with the difficulties faced by young people aspiring to be scientists in developing countries. After finishing her degree it took seven years of hard work to pay back her university loans before she could start her postgraduate studies at the California Institute of Technology, where she obtained a PhD in aeronautics in 2004. Now resident in Bristol, she maintains ties with her first mentors in Chile and through them has extended her network of contacts to Brazil, as well as to France and Spain. Her proposal became one of only six successful projects in this final round of funding. ➡
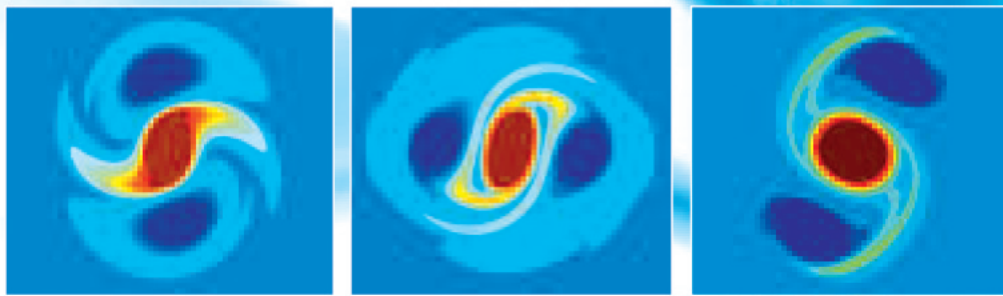
Tripole evolution.

➜ After a year of negotiations with the EC, the project finally got started and following the launch meeting in Barcelona (February 2006), the SCAT project held its first international meeting in the Daresbury Laboratory last June. There the international team considered the first batch of applicants for the mobility grants and chose to award three. Two of the successful applicants will come to Bristol to work with Dr Barba, while the third goes to Marseille.

of celestial bodies under gravitational forces, for example, those that are far away from a point can be bundled together to calculate their approximate influence, thereby greatly speeding up the results.

Helmut Wahanik, from the Instituto de Matemática Pura e Aplicada, Brazil, will come to Bristol to study objects that appear in fluid flows where a number of eddies form a tight constellation and rotate together.

Clever algorithms can achieve far more than fast computers

Felipe Cruz is currently an MSc student in the field of Informatics and Computer Science, in Valparaíso, Chile. His SCAT grant will enable him to work on the implementation of fast particle methods where the calculations involved are usually too great, and the computational resources too small, to complete them in a sensible time frame. Moore's Law suggests that computer processors double their speed every 18 months, so in theory if we wait long enough the computer will eventually become fast enough to solve any problem. But in fact clever algorithms can achieve far more than fast computers, and in a much shorter time-scale. For example, if a problem has a million unknowns and there is a solution algorithm which requires N-squared operations, it would take 16 generations of Moore's law (ie 24 years) before this solution method is comparable to a 'fast' algorithm only requiring N operations. Felipe will be working on devising such intelligent algorithms that will speed up the calculation of large numbers of interactions by making small approximations. When simulating the interactions of millions

They are called vortex multipoles and they behave in fascinating ways. The tripole, for example, is an arrangement of three eddies, where the central one rotates in the opposite sense to the two outer vortices. The whole arrangement rotates around the centre and can survive for a long time. These types of vortices are studied in relation to the oceans where the main source of variability in temperature, salinity and other properties is caused by eddies, so it is important to understand their behaviour.

For all of these young aspiring scientists, the opportunity to join a research group in Europe, have the mentoring and guidance of established international leaders in their fields, and have the chance to do hands-on computational science in world-class facilities, will be life-changing. Apart from what they learn during their stay, they will go back to their countries to become part of the academic community, having developed international collaborations that will help their career for years to come. ■

Proyecto SCAT trabaja en la especialización de profesionales en el área

Potenciando la computación científica

▶ **Iniciativa reúne a** diez universidades de Europa y Latinoamérica. Dos de ellas son chilenas.

CYNTHIA O'RYAN

Concientes de que la computación hoy día es parte inherente de nuestras vidas y, por lo tanto, también es un elemento fundamental en el desarrollo y complemento de diversas áreas científicas, se manifestó un grupo de especialistas que por estos días participa en el "Primer workshop y escuela de verano SCAT latinoamericano", en la Universidad Técnica Federico Santa María.

El propósito principal de este evento es lograr un alto desarrollo de la computación científica para diversas aplicaciones de ingeniería, junto con desarrollar un importante conocimiento e impacto de los supercomputadores en el mundo académico.

INICIATIVA INTERNACIONAL

Este trabajo se está llevando a cabo a través de un proyecto internacional denominado SCAT, iniciativa cofinanciada por el Programa Alfa de Europa e impulsada por diez instituciones de investigación europeas y latinoamericanas, pertenecientes a Chile, Brasil, México, Inglaterra, Francia y España.

Así lo explicaron Lorena Barba y Boris Drapier, jefa y manager de este proyecto, respectivamente, quienes destacaron que este plan - que tiene una duración de tres años- reúne a investigadores de las áreas de las ma-
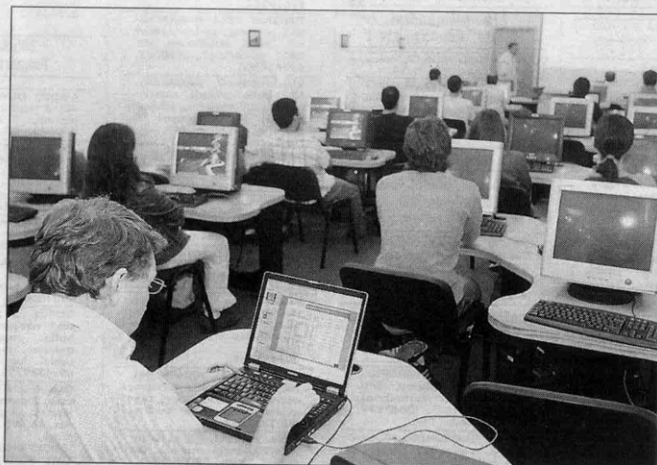
PROYECTOS.- Los miembros de SCAT pueden participar en la elaboración de proyectos en el área.

temáticas aplicadas, la física, la ingeniería y la informática, a quienes proporciona entrenamiento sobre computación científica, con la misión de fomentar el interés por el tema, y así lograr un alto desarrollo y aplicación de la disciplina en la medicina, meteorología y comunicación, entre otras.

BECAS ESTUDIANTILES

Drapier explicó que una de las oportunidades que otorga la red SCAT consiste en la entrega de becas a estudiantes de los países

e instituciones miembros para realizar perfeccionamiento científico en Europa o en Latinoamérica, intercambio que dura ocho meses y en los que los jóvenes trabajan en un proyecto relacionado con la computación científica.

Lorena Barda dijo que en este momento hay cinco estudiantes beneficiados con estas becas, uno de los cuales pertenece a la Universidad Federico Santa María (plantel que es miembro del proyecto SCAT junto a la Universidad de Chile). Este alumno de Ingeniería Informática, Felipe Cruz, se encuentra

Desafíos

En cuanto a los desafíos que enfrenta la computación científica, Luis Salinas y Gonzalo Hernández, académicos de la Universidad Técnica Federico Santa María, esplicaron que estos son "infinitos", puesto que ambas áreas necesitan ir creciendo acorde a las necesidades de los nuevos tiempos y al surgimiento de tecnologías y problemáticas de la sociedad.

Sin embargo, detallaron que el trabajo futuro debe estar centrado principalmente en la formación de profesionales expertos en el tema, en el desarrollo de algoritmos inteligentes que permitan aprovechar al máximo los recursos de la computación, además de lograr indispensables avances en hardware. "El desafío para la computación científica es total", aseguraron.

en Inglaterra y acaba de ser premiado por la empresa Apple con un notebook por su importante labor.

André Nachbin, del Instituto de Matemática Pura y Aplicada de Brasil, junto a Óscar Orellana, académico de la UTFSM, valoraron el aporte del proyecto SCAT al desarrollo de la computación científica, puesto que dijeron que hoy no se pueden entender muchos procesos de las áreas de la medicina, las comunicaciones, las matemáticas y la física, entre muchos otros, sin el apoyo y complemento de la informática.

EX UMBRA IN SOLEM   DE LA SOMBRA A LA LUZ

ACREDITADA 6 AÑOS 2005 2011

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UNIVERSIDAD TECNICA FEDERICO SANTA MARIA

Eventos USM

Workshop y Esc. de Verano SCAT

La actividad que es organizada por la Universidad Técnica Federico Santa María, pretende lograr un alto desarrollo de la computación científica y mejorar el conocimiento e impacto de los supercomputadores tanto en el plantel como en la Universidad de Chile.

Para profundizar acerca de la computación científica avanzada y las diversas herramientas tecnológicas proporcionadas por la High Performance Computing, se realizará en la Universidad Técnica Federico Santa María el evento denominado "First Latin American SCAT Workshop and Summer School", cuyo principal propósito es lograr un alto desarrollo de la computación científica para diversas aplicaciones de ingeniería, junto con desarrollar un alto conocimiento e impacto de los supercomputadores, tanto en el plantel como en la Universidad de Chile.

La actividad que se desarrollará en la Casa Central de la Universidad, entre el 4 y el 12 de enero, contará con la presencia de connotados especialistas en la materia, como Charles Meneveau, de la Johns Hopkins University (EEUU); David Emerson, del Daresbury Laboratory (Reino Unido); Alberto Verga, del Institut de Recherche IRPHE (Francia); Rodrigo Soto, del Departamento de Física de la Universidad de Chile, entre otros destacados investigadores, quienes ahondarán en lo que respecta al desarrollo de la computación científica, y al mismo tiempo organizarán reuniones, cursos y todo tipo de actividades tendientes a apoyar el autoaprendizaje computacional.

Cabe destacar, que el proyecto SCAT es cofinanciado por el Programa Alfa de Europa, teniendo como principal objetivo desarrollar una comunidad sistémica y duradera entre las instituciones de alto nivel educacional existentes en América Latina; en definitiva, se pretende contribuir al progreso económico y social de estos países.

El "First Latin American SCAT Workshop and Summer School" no sólo centrará su atención en las diversas charlas y actividades organizadas por los expositores tanto chilenos como extranjeros, sino que también está contemplada la puesta en marcha de una Summer School, orientada a impartir diversos cursos alusivos al conocimiento y mejoramiento de nuevas tecnologías.

Publicado: 09 Dec 2006 por **dgc**

Ver otros eventos...
última modificación: 15.11.2004

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Computación científica: el futuro llegó para quedarse

Expertos europeos y de América Latina participaron en la Universidad Santa María del "First Latin American SCAT Workshop and Summer School" SCAT 2006, con el objetivo de profundizar acerca de la computación científica avanzada y las diversas herramientas tecnológicas proporcionadas por la High Performance Computing.

No cabe duda que la computación está presente en todos los procesos de la vida cotidiana. La meteorología, la medicina, la minería, el sector portuario, el agro, han logrado mejorar sus procesos y optimizar sus recursos gracias a modernas herramientas informáticas y el trabajo mancomunado de especialistas en diversas áreas. Y para analizar estos y otros temas, expertos en el área se reunieron en la Casa Central de la Universidad Técnica Federico Santa María en el "First Latin American SCAT Workshop and Summer School" SCAT 2006.

SCAT es un proyecto internacional cofinanciado por el Programa Alfa de Europa e impulsado por diez instituciones de investigación europeas y latinoamericanas, pertenecientes a Chile, Brasil, México, Inglaterra, Francia y España que reúne a investigadores de las áreas de las matemáticas aplicadas, la física, la ingeniería y la informática, a quienes proporciona entrenamiento sobre computación científica, con la misión de fomentar el interés por el tema, y así lograr un alto desarrollo y aplicación de la disciplina en la medicina, meteorología y comunicación, entre otras.

Lorena Barba, directora de este innovador proyecto, explicó que "la computación científica es una manera de hacer descubrimiento científico. Desde los inicios de la informática ha existido la simulación en computadoras, sin embargo, hoy la tecnología nos permite realizar experimentos de alta complejidad por medio de la simulación. Del mismo modo, el desarrollo tecnológico permite a las universidades hacer trabajo de investigación colaborativo".

Por su parte el académico del Departamento de Informática de la USM, Luis Salinas, señaló que "hoy todos los procesos de Ingeniería pasan por la computación. Por ejemplo, para prever situaciones climáticas o para inferir cuánta energía tendremos. Cuando los sistemas están colapsados, la computación científica nos permite optimizar las operaciones, lo que hace 30 años atrás se hacía en forma experimental. En telecomunicaciones o en los puertos, las unidades reciben información satelital y la recolección de esta información se hace vía programas de computación muy complejos".

Desafíos

Producto del rápido avance de la ciencia, la computación científica implica hoy una serie de desafíos. Lorena Barba señaló que "cada 18 meses, la capacidad de un chip se duplica. Sin embargo, la capacidad de memoria del hardware no se ha desarrollado a la misma velocidad. Por eso, el desafío más grande es el desarrollo de algoritmos inteligentes y se necesitan resolver incógnitas. Si mediante el uso de algoritmos inteligentes podemos resolver problemas con mayor rapidez, cumplimos el desafío y aprovechamos los sistemas más eficientemente".

Por su parte, Luis Salinas añadió que "los desafíos son infinitos. La capacidad de información que se extrae, supone la capacidad de los PC para poder realizar millones de tareas en poco tiempo, coordinando cantidades insospechadas de información. Se requieren hardware para desarrollar eso y debe haber trabajo mancomunado entre las diversas áreas".

"Por eso, el desafío también es grande en la formación del recurso humano. En la computación científica hay mucho conocimiento que está en pañales. Queremos enfrentar ese problema y formar gente en computación científica viajando para que el experto aporte en diversas áreas".

SCAT

SCAT es un proyecto cofinanciado por el Programa Alfa de Europa, teniendo como principal objetivo desarrollar una comunidad sistémica y duradera entre

las instituciones de alto nivel educacional existentes en América Latina; en definitiva, se pretende contribuir al progreso económico y social de estos países.

Lorena Barba explicó que "dentro de las oportunidades que ofrece el proyecto está la entrega de becas para estudiantes de Latinoamérica que realicen investigación y desarrollo en áreas de Ingeniería, Matemática e Informática y Computación Científica para que los jóvenes investigadores realicen 8 meses de investigación en computación científica en cualquiera de las instituciones miembros del consorcio".

¿Requisitos?. Tener buena base en matemáticas, inglés, tener interés en la investigación y estar dispuesto a trabajar en proyectos a elección de ellos, según sus intereses. André Nachbin, del Instituto de Matemática Pura y Aplicada de Brasil, señaló que "buscamos estimular a los jóvenes para trabajar en estos proyectos y generar conocimiento de punta e interesante"

Por su parte, Oscar Orellana, académico de la USM puntualizó que "no es menor que haya 10 instituciones internacionales involucradas en el proyecto. Fuimos pioneros en esto y por eso necesitamos gente preparada. No podemos prescindir de la computación científica para la toma de decisiones, pues no se puede concebir que quien toma las decisiones los haga sin informarse".

Publicado: 12 Jan 2007 por **dgc**

Ver otras noticias...
última modificación: 15.11.2004

Appendix D

Documentation for Distance Collaboration

D.1   Screen shots of the *Blackboard* space: Announcements page; Project Information section; example of a meeting section (Barcelona meeting) making available slides of all presentations; Project Documents section; "Groups" pages.

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SCAT
SCIENTIFIC COMPUTING ADVANCED TRAINING

VIEW TODAY | VIEW LAST 7 DAYS | VIEW LAST 30 DAYS | VIEW ALL

All Announcements

Tue, Feb 27, 2007 -- *Minutes of selection posted!*   Posted by: Boris Drappier
The minutes of the last selection procedure, held at USM-Valparaiso in January 2007, are now posted. Click on the link below...
Course Link: SCAT Documents / Mobility Grants documents / Grant holders selection / Minutes 06 January 2006 -Valparaiso

Mon, Dec 11, 2006 -- *Fast Track Procedure approved*   Posted by: Boris Drappier
The Fast Track procedure set up for Thomas Séon has been approved by the scholarship team, and the grant holder is currently in Chile getting started with his research project.
Course Link: Fast Track Procedure approved

Fri, Nov 17, 2006 -- *New thread have been created in the Discussion board*   Posted by: Boris Drappier
The "Medical Insurance and Scat Responsibility" is now being discussed into the Discussion board. All comments are more than welcome! Follow the link below...
Course Link: Discussion Board/SCAT Project Actions

Fri, Nov 17, 2006 -- *Mobility Groups have been created!*   Posted by: Boris Drappier
New groups are now available for all SCAT mobilities. Students as well as tutors and supervisor have full access to their corresponding group. Services availables are: e-mail, secured shared documents, groups discussion. ...follow the link below
Course Link: Mobility Groups have been created!

Mon, Nov 13, 2006 -- *Selection held in Paris*   Posted by: Boris Drappier
You'll find here the minutes of the selection procedure held in Paris on 26 September 2006, where 2 candidates were applying. Ana González was accepted in this opportunity.
Course Link: SCAT Documents / Mobility Grants documents / Grant holders selection

Wed, Oct 25, 2006 -- *Paris Meeting: Slides & Pictures posted*   Posted by: Boris Drappier
The slides of the presentation given at the Paris meeting are being posted on the meeting's link (click below). Pictures of some sessions are also available there!

EDIT VIEW

Project Information

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SCAT project website

ALFA Programme

The ALFA logo links to the ALFA Programme website, where you will find the latest news of the various ongoing projects, as well as Information and FAQs. You can also access the Programme's Guidelines in English, French, Spanish, and Portuguese.

The website will open within this Blackboard space, so you can go back to other content areas after your visit.

Project Description

The first goal of any ALFA project is the development of a systematic and lasting partnership between Higher Education Institutions in Latin America and Europe, contributing to national and regional economic and social development in Latin America.

This project falls under "Sub-Programme B" for Scientific and Technical training, and thus has an important mobility component. This involves the mobility of students in their last year of degree (thesis), post-graduates (MSc and PhD) during an important period of their study, and post-doctoral researchers. It also includes the mobility of researchers for short periods, for the acquisition of specific advanced skills, and of professors for the purposes of teaching short courses, and a calendar of International Scientific Workshops.

SCAT project application

applicationformSCAT.pdf (820.909 Kb)

The **SCAT Project Application,** submitted for the 10th round of the ALFA programme (Oct. 2004). Click on the link above to view the complete file in PDF format (82 pages).

This project falls under "Sub-Programme B" for Scientific and Technical Training (for this reason, you will see the striked-out Index entries for Sub-Programme A for Academic and Institutional Management). The technical description of our project starts on page 44 of this Application form.

Slides from presentations.

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Project Informati

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Science Documents

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SCAT General talk
Lorena Barba's presentation: 6 slide-per-page handout (205.483 Kb)
SCAT-Barba.pdf (552.936 Kb)

First day presentation by Lorena Barba on the ALFA Programme, the SCAT project, and details on the budget and how things work.

CCLRC - Daresbury Labs, UK
David Emerson's talk : 6 slide-per-page handout (559.224 Kb)
David Emerson's slides in PDF (3.188 Mb)
Mike Ashworth's talk: 6 slide-per-page handout (303.251 Kb)
Mike Ashworth's slides in PDF (1.319 Mb)

Presentations on the first day of the meeting, by David and Mike, including an introduction to CCLRC, an overview of the Computational Science Department and many examples of advanced computational research carried out there: molecular dynamics; self-assembled nano-wires; and, especially, microfluidics. Mike presented HPCx: the principal academic and research computing service for the UK.

Field visit -- Barcelona Supercomputing Centre
BSC and MareNostrum talk: 6 slide-per-page handout. (748.571 Kb)
Slides of the BSC and Marenostrum talk. (3.183 Mb)

On Tuesday morning, we visited Barcelona Supercomputing Centre, where the fastest computer in Europe, MareNostrum, is impressively housed in an old, converted church. During the visit, there were presentations of BSC and MareNostrum, given by Oriel Riu and Ernest Artiaga (download the slides from the presentations via the links above).

MareNostrum movies
Movies in both .avi format (Windows) and converted to .mov format (Macintosh QuickTime).

ESPCI : Eduardo Wesfreid and Agnes Maurel
Agnes Maurel's talk: 6 slides-per-page handout. (379.123 Kb)
Agnes Maurel's slides in PDF. (1.737 Mb)
Eduardo Wesfreid's talk in PDF (53.228 Mb)
Eduardo Wesfreid's talk: 6 slides-per-page handout. (766.014 Kb)

Presentations on Day 2 of the meeting from the *Ecole Superieure de Physique et de Chimie Industrielles*. Eduardo presented research at the unit *Physique et Mecanique des Milieux Heterogenes*, and Agnes presented her research programme at the *Laboratoire Ondes et Acoustique*.

LMM - Christophe Josserand and Joel Frelat
Christophe's talk: 6 slide-per-page handout in PDF (1.194 Mb)
Christophe's slides in PDF format (5.564 Mb)

Christophe talked about the LMM, Laboratoire de Modelisation in Mecanique, and presented his work on

Ole online learning environment

Home   Courses

SCAT Documents

Announcements
Project Informati
People
News
SCAT Meetings
SCAT Documents
Science Documents
Tools
Discussion Board
Groups

Tools
- Communication
- Course Tools
- Course Map

Control Panel

Refresh
Detail View

Mobility Grants documents
Rules regarding the selection of grant holders, their responsabilities and the duties of the tutors and supervisors.   + minutes of selections processes, poster annoucements...

SCAT Summary Research
SCAT summary research (431.353 Kb)
This is an overview of the main topics covered by SCAT members. It summarises what each institution focuses on, based on the presentation given at the launch meeting in Barcelona, Feb. 2006

Forms (Expenses Claims, etc.)

General Rules for reimbursement, Forms for Travel expense claims, Foreign Currency Reimbursements, Bank transfer requests, etc.

SCAT project visibility

SCAT logo files in different formats, and visibility guidelines.

Blackboard Guide for "Students"
Guide for Students to BB in .pdf (306.592 Kb)
This User's Guide was drafted as an introduction for U. of Bristol students using the Blackboard environment for the first time. Some indications do not apply for SCAT-Project members, but some instructions are useful to get you started.

ALFA Programme documents & SCAT project Application
Find here the complete application submited to the ALFA programme (Oct. 2004), and documents pertaining to the programme (guidelines, rules and regulations, etc.).

General Exchange Folder
Here you can add files, comments, profiles (all members can access it)
If you want to submit files that only the Administrators can download, use the Digital DropBox instead (**Tools Section**)

Grant-holders
Area for all grant-holders. Private discussion board -- including social and casual conversations of all interests and experiences during their stay at the host institution.

Mobility DFI > LMM
Documents from grant holders are posted here: CV, Application, Personal Statement, English scores, etc
Grant holder: **Leonardo Gordillo**

Mobility IMPA > Bristol
Documents from grant holders are posted here: CV, Application, Personal Statement, English scores, etc
Grant holder: **Helmut Wahanik**

Mobility LMM > DFI - UChile
Documents from grant holders posted here: CV, Application, Personal Statement, English scores, etc
Grant holder: **Thomas Séon**

Mobility UNAM > Daresbury
Documents from grant holders are posted here: CV, Application, Personal Statement, English scores, etc
Grant holder: **Ana González**

Mobility USM > Bristol
Documents from grant holders are posted here: CV, Application, Personal Statement, English scores, etc
Grant holder: **Felipe Cruz**

SCAT Team "Dissemination"
S. Rica, S. Gómez, B. Drappier, L. Barba

SCAT Team "Scholarships"
A. Maurel, A. Nachbin, C. Pérez, L. Salinas, V. Tchijov, B. Drappier, L. Barba

SCAT Team "Science topics"
A. Verga, C. Josserand, D. Emerson, J. Zubelli, O. Orellana, L. Barba, B. Drappier

SCAT Team "Short courses"
E. Wesfreid, I. Stewart, M. Soria, M. Ashworth, B. Drappier, L. Barba

Appendix E

Additional Documentation

Note   The documents in this Appendix are not included in the electronic version (PDF) of this document —only in the hard copy. They include:

- Financial report, indicating the level of expenditures reached at the end of the period of the Interim Report.

- Time sheets supporting the estimates of personnel costs for joint coordination.

- CD with additional files: presentations at SCAT meetings, CVs of grant holders, grant application files.