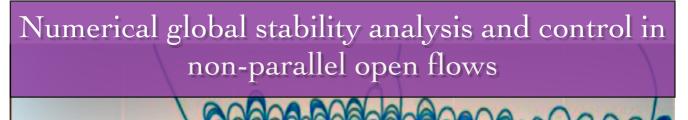# Third European SCAT Workshop & Summer School
in partnership with IRPHE and CNRS

"Vortices and Vortex Sheets: theories, numerics and applications"

Numerical global stability analysis and control in non-parallel open flows

One of a series of mini-courses taking place 4-10 June 2007, Centre IGESA

Description

In non-parallel open flows, global temporal eigenmodes of the linearized Navier-Stokes operator become a natural tool of stability analysis. The projection on the set of non-normal global eigenmodes is shown to be suitable for optimal perturbation analyses. The resulting finite-dimensional system is then used for control and estimation via Riccati-based feedback and the flow is coupled to the controller through appropriate sensor and actuator locations.

The approach is illustrated considering a separated boundary layer flow at the rear of a bump.

Lecturer

Prof. Uwe Ehrenstein, Université de Provence, France

Syllabus

- ‣ Direct and adjoint global modes using Krylov subspace computations
- ‣ Eigenmode basis and optimal perturbation analysis
- ‣ Non-normal flow dynamics
- ‣ Riccati based approach for control and estimation
- ‣ Design of controller via model reduction using global modes

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

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