

# BAIL 2010, Zaragoza July 5-9 July 2010

## Minisymposium

### Robust numerical methods for time-dependent singularly perturbed problems

Proposed and organised by *Jose Luis Gracia*, Zaragoza and *Torsten Linß*, Dresden

Robust numerical methods for *stationary* singularly perturbed problems have been extensively analysed in the literature for two decades. All flavours of numerical methods have been investigated: difference schemes, FEM and FVM. For time-dependent problems the situation is quite different although there has been an upsurge in papers on the subject in recent years. Therefore, in this mini symposium we like to bring together researcher that have worked in this area to discuss the state-of-the-art in this field, to present their ongoing projects and to discuss a possible road map for future research in the field.

#### Speakers

- Juan Carlos Jorge (40-50min survey lecture): Robust time integrators and uniformly convergent spatial discretizations for singularly perturbed parabolic problems: state of the art, pending tasks and challenges
- Eugene O’Riordan/J.L. Gracia: A singularly perturbed time dependent convection diffusion problem with an interior layer
- Torsten Linß: Robust pointwise a posteriori error estimates for time-dependent singularly perturbed problems
- N. Kopteva/S. Franz: Maximum norm a posteriori error estimates for time-dependent convection-diffusion equations
- Naresh Chandra/Niall Madden: An optimal time-stepping for a time dependent advection-diffusion problem
- K. K. Mondal/N. Madden: Some singularly perturbed nonlinear convection diffusion problems.
- Jose Luis Gracia/Carmelo Clavero: Uniformly convergent finite difference schemes for singularly perturbed 1D parabolic reaction–diffusion problems

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