

International Conference in
Boundary and Interior Layers,
BAIL 2018
CONFERENCE PROGRAMME

University of Strathclyde, Glasgow,
18th-22nd of June, 2018

Note : All talks will take place in room SW / 105, Stenhouse wing, Floor 1. (building 14 on the map)

Monday 18th of June

08:20 - 09:20 : Registration. Stenhouse foyer.

09:20 - 09:30 : Opening Remarks.

09:30 - 10:30 : Session 1 (chair: G.R. Barrenechea)

09:30 - 10:30 : **Volker John** : *Finite elements for scalar convection-dominated equations and incompressible flow problems: a never ending story?*

10:30 - 11:00 : Coffee break. Stenhouse foyer.

11:00 - 12:40 : Session 2 (chair: A. Ern)

11:00 - 11:25 : **Petr Knobloch** : *A unified analysis of AFC schemes for convection-diffusion equations.*

11:25 - 11:50 : **Abhinav Jha** : *On solving the nonlinear problems arising in algebraic stabilizations of steady-state convection-diffusion equations.*

11:50 - 12:15 : **Sibusiso Mabuza** : *High order algebraic flux correction algorithms based on Bernstein-Bezier finite elements for nonlinear hyperbolic systems.*

12:15 - 12:40 : **Christoph Lohmann** : *Analysis and design of algebraic flux correction schemes for eigenvalue range preserving transport of symmetric tensor fields.*

12:40 - 14:10 : Lunch break. TIC building.

14:10 - 15:25 : Session 3 (chair: P. Knobloch)

14:10 - 14:35 : **Julia Novo** : *Error analysis of non inf-sup stable discretizations of the time-dependent Navier-Stokes equations with local projection stabilization.*

14:35 - 15:00 : **Bosco García-Archilla** : *A projection method with grad-div stabilization for the time-dependent Navier-Stokes equations.*

15:00 - 15:25 : **Rahul Biswas** : *Patch-wise local projection stabilized FEM for the Oseen problem.*

15:25 - 15:55 : Coffee break. Stenhouse foyer.

15:55 - 17:10 : Session 4 (chair: A. Hegarty)

15:55 - 16:20 : **Eugene O’Riordan** : *Singularly perturbed reaction-diffusion problems with incompatible boundary-initial data.*

16:20 - 16:45 : **José Luis Gracia** : *Parameter-uniform global accuracy for singularly perturbed parabolic problems with incompatible boundary-initial data.*

16:45 - 17:10 : **Juan Carlos Jorge** : *A splitting linearly implicit method for solving time dependent semilinear reaction- diffusion systems.*

18:15 - 19:15 : Dinner. TIC building.

19:30 - 21:00 : Drinks reception. Glasgow City Chambers.

Tuesday 19th of June

09:30 - 10:30 : Session 5 (chair: M. Stynes)

09:30 - 10:30 : **Alexandre Ern** : *Hybrid High-Order methods: overview and recent advances.*

10:30 - 11:00 : Coffee break. Stenhouse foyer.

11:00 - 12:40 : Session 6 (chair: F. Valentin)

11:00 - 11:25 : **Florent Chave** : *A Hybrid High-Order method for flows and passive transport in fractured porous media.*

11:25 - 11:50 : **Tristan Pryer** : *Recovered element methods on polygonal meshes for convection-diffusion problems.*

11:50 - 12:15 : **Peter Dong** : *hp-version discontinuous Galerkin methods on polygonal and polyhedral meshes.*

12:15 - 12:40 : **Patrick Vega** : *An adaptive HDG method for the Brinkman problem.*

12:40 - 14:35 : Lunch break. TIC building.

13:40 - 14:35 : Meeting of the BAIL Steering Committee.

14:35 - 15:25 : Session 7 (chair: B. García-Archilla)

14:35 - 15:00 : **Sônia Gomes** : *Mixed finite element approximations based on hp-adaptive quarter-point meshes for some singular elliptic problems.*

15:00 - 15:25 : **Christos Xenophontos** : *An hp finite element method for a reaction-convection-diffusion problem with two small parameters.*

15:25 - 15:55 : Coffee break. Stenhouse foyer.

15:55 - 17:10 : Session 8 (chair: A. Allendes)

15:55 - 16:20 : **Tomáš Vejchodský** : *Robust and efficient guaranteed error bounds for reaction-diffusion problems.*

16:20 - 16:45 : **Torsten Linß** : *Maximum-norm a posteriori error estimates for singularly perturbed parabolic equations.*

16:45 - 17:10 : **Natalia Kopteva** : *A posteriori error estimation on anisotropic meshes: lower and upper error bounds.*

18:30 - 19:30 : Dinner. TIC building.

Wednesday 20th of June

09:00 - 10:00 : Session 9 (chair: G. Lube)

09:00 - 10:00 : **Frédéric Valentin** : *MHM methods for fluids.*

10:00 - 10:30 : Coffee break. Stenhouse foyer.

10:30 - 12:10 : Session 10 (chair: E. Georgoulis)

10:30 - 10:55 : **Max Jensen** : *Convergent semi-Lagrangian methods for the Monge-Ampère equation: non-convex domains and boundary layers.*

10:55 - 11:20 : **Dante Kalise** : *Identifying basins of attraction of metastable dynamics via Zubov's method.*

11:20 - 11:45 : **Alejandro Allendes** : *A posteriori error estimates for the Stokes problem with singular sources.*

11:45 - 12:10 : **Marius Bruchhäuser** : *Goal-oriented error control for stabilized approximations of convection-dominated problems.*

12:10 - 13:10 : Lunch break. Stenhouse foyer.

13:30 - 19:00 : Outing. Glengoyne distillery, and walking around Luss.

19:30 - 20:30 : Dinner. TIC building.

Thursday 21th of June

09:30 - 10:30 : Session 11 (chair: J. MacKenzie)

09:30 - 10:30 : **Emmanuel Georgoulis** : *Interface Layers*.

10:30 - 11:00 : Coffee break. Stenhouse foyer.

11:00 - 12:40 : Session 12 (chair: V. John)

11:00 - 11:25 : **Gert Lube** : *On some experience with high-order, exactly divergence-free FEM for transient incompressible flow problems*.

11:25 - 11:50 : **Philipp Schroeder** : *Sensitivity of mixing layers – why it is difficult to obtain reliable simulations for 2D Kelvin–Helmholtz instability problems*.

11:50 - 12:25 : **Alan Hegarty** : *Towards a numerical solution of the Hemker problem*.

12:25 - 12:40 : **Marco Fossati** : *Optimizing reduced basis methods for cost-effective computational aerodynamics*.

12:40 - 14:10 : Lunch break. TIC building.

14:10 - 15:25 : Session 13 (chair: V. Calo)

14:10 - 14:35 : **Guillaume Delay** : *Numerical simulation on a fixed mesh of a fluid-structure interaction system with a structure given by a finite number of parameters*.

14:35 - 15:00 : **Roger Khayat** : *Impinging jet flow and hydraulic jump on a rotating disk*.

15:00 - 15:25 : **Bernhard Scheichl** : *Centred splash of a vertical jet on a horizontal rotating disc: the thin radial film in the parabolic and weakly elliptic limit*.

15:25 - 15:55 : Coffee break. Stenhouse foyer.

15:55 - 16:45 : Session 14 (chair: J. Novo)

15:55 - 16:20 : **Marcus Waurick** : *Numerics and perturbation analysis for some mixed type problems*.

16:20 - 16:45 : **Heather Yorston** : *A stabilised finite element method for the convection-diffusion-reaction equation in mixed form*.

18:00 - 22:00 : Conference dinner. The Lighthouse (11 Mitchell Lane, Glasgow G1 3NU).

Friday 22nd of June

09:30 - 11:10 : Session 15 (chair: N. Kopteva)

09:30 - 09:55 : **Martin Stynes** : *Supercloseness of edge stabilization on Shishkin rectangular meshes for convection–diffusion problems with exponential layers.*

09:55 - 10:20 : **Jin Zhang** : *Supercloseness of continuous interior penalty methods on Shishkin triangular meshes and hybrid meshes.*

10:20 - 10:45 : **Gunar Matthies** : *A unified framework for time-dependent singularly perturbed problems with discontinuous Galerkin methods in time.*

10:45 - 11:10 : **Andreas Wachtel** : *On the inf-sup stability of the lowest order Taylor-Hood pair on anisotropic meshes.*

11:10 - 11:40 : Coffee break. Stenhouse foyer.

11:40 - 12:40 : Session 16 (chair: J. Pestana)

11:40 - 12:40 : **Victor Calo** : *Stabilization of convection-dominated diffusion with optimal test functions.*

12:40 - 12:50 : Closing remarks and conference end.

12:50 - 13:50 : Lunch. The Stenhouse foyer.