



NUMERICAL ANALYSIS: MULTISCALE METHODS, ADAPTIVITY AND COMPLEXITY

Programme for the Workshop (All talks to take place in 3E 2.1)

Tuesday 4th September

10.20 - 10.50 Registration and refreshments in 3E foyer

10.50 - 11.00 Welcoming remarks by **C.J.Budd**, Director of BICS

11.00 - 11.40. **T.-Y. Hou** (Caltech),
"Multiscale computation for flow and transport in heterogeneous porous media"

11.40 - 12.20 **C. M. Elliott** (Warwick),
"Computational approaches to surface partial differential equations"

12.20 - 14.00 Lunch in the Claverton Rooms.

14.00 - 14.30 **C.-C. Chu** (Caltech),
"Multiscale finite element methods for dynamic interface problems "

14.30 - 15.00 **S. Tavener** (Colorado State),
"A posteriori error estimation and adaptivity for an operator decomposition approach to conjugate heat transfer"

15.00 - 15.30 **P. F. Antonietti** (Nottingham),
"Efficient preconditioners based on two-level discretizations for discontinuous Galerkin methods"

15.30 - 16.00 Refreshments and discussions in 3E foyer

16.00 - 16.40 **M. Cullen** (U.K. Met. Office),
"Data assimilation for systems with multiple timescales "

16.40 - 17.10 **G. Baxter** (Reading),
"Towards multiscale data assimilation for high resolution nested models"

17.10 - 17.50 **C.N Mitchell** (Bath),
"Inversion imaging of the Sun-Earth system "

17.50 - 18.30 **R. Potthast** (Reading),
"On adaptivity and scale in inverse acoustic scattering"

Wednesday 5th September

09.00 - 09.40 **M. Burger** (Münster),
"Inverse multiscale problems"

09.40 - 10.20 **I.G. Kevrekidis** (Princeton),
"Some applications of equation-free computation"

10.20 - 10.50 Refreshments and discussions in 3E foyer

11.00 - 11.40 **W. Dahmen** (Aachen),
"Universal algorithms for machine learning"

11.40 - 12.20 **R. Tempone** (Florida State),
"Adaptive weak approximations of diffusions with jumps"

12.20 - 14.00 Lunch in the Claverton Rooms

14.00 - 14.30 **L. Salvatori** (Florence),
"Gross scale effects of atomic rearrangements in quasicrystals: numerical simulations and wavelet analysis"

14.30 - 15.00 **M. Mommer** (Heidelberg),
"Modelling and simulation of subdiffusion using reaction diffusion systems"

15.00 - 15.30 **J. Van lent** (Bath),
"Constructing robust coarse spaces for overlapping Schwarz Methods"

15.30 - 16.00 Refreshments and Discussions in 3E foyer

16.00 - 16.30 **O. Lakkis** (Sussex),
"A posteriori analysis via elliptic reconstruction for fully discrete parabolic equations"

16.30 - 17.00 **T. Pryer** (Sussex),
"Recovery based a posteriori estimators for parabolic problems using elliptic reconstruction"

17.00 -17.30 **S. Giani** (Bath)
"Convergent adaptive FEM for eigenvalue problems with application to photonic crystal fibres"

17.30 – 18.10 **E. Süli** (Oxford),
"High-dimensional transport-diffusion equations: analysis and approximation"

Evening event: - - - Wine reception in room 1W 3.6

Thursday 6th September

- 09.00 - 09.40 **I. Sloan** (New South Wales),
"Lifting the curse of dimensionality: numerical integration in very high dimensions"
- 09.40 - 10.20 **C. Reisinger** (Oxford),
"Analysis and application of the sparse grid combination technique"
- 10.20 - 10.50 Refreshments and discussions in 3E foyer
- 11.00 - 11.40 **C. Schwab** (ETH Zürich)
"Numerical analysis and computational aspects of sparse gpc-FEM for elliptic problems with stochastic data"
- 11.40 - 12.20 **S.N. Chandler-Wilde** (Reading),
"Numerical simulation of rough surface scattering"
- 12.20 - 14.00 Lunch in the Claverton Rooms
- 14.00 - 14.30 **Z. Stoyanov** (Bath),
"The sensitivity of spectral clustering applied to gene expression data"
- 14.30 - 15.00 **M.Freitag** (Bath),
"Inexact Shift-and-Invert Arnoldi's Method and Implicit Restarts with Preconditioning for Eigencomputations"
- 15.00 - 15.30 **S. van Veldhuizen** (Delft),
"Solving implicit relations by inexact Newton methods: Application to chemical vapour deposition"
- 15.30 - 16.00 Refreshments and Discussions in 3E foyer
- 16.00 - 16.40 **D. Bird** (Bath),
"Guidance of light in photonic crystal fibres"
- 16.40 - 17.10 **R. Norton** (Bath)
"Convergence analysis of planewave expansion for band gap computations in photonic crystal fibres"
- 17.10 - 17.40 **E. Heinemeyer** (Göttingen)
"A fast high order method for 3D rough surface scattering problems"
- 17.40 - 18.20 **V. P. Smyshlyaev** (Bath)
"Asymptotic-numerical hybrids in high frequency scattering by smooth and non-smooth obstacles"

Friday 7th September

09.00 - 09.40 **M. Kirkilionis** (Warwick),
“Numerical simulation of cellular transportation and reaction systems”

09.40 - 10.20 **P. K. Jimack** (Leeds),
“An adaptive numerical method for multi-scale problems arising in phase-field modelling”

10.20 - 10.50 Refreshments and discussions in 3E foyer

11.00 - 11.40 **W. Huang** (Kansas)
“Equidistribution and alignment in mesh adaptation and movement”

11.40 - 12.10 **M. J. Baines** (Reading),
“An adaptive method for PDEs which preserves scaling symmetry”

12.10 - 12.40 **C. Carstensen** (Berlin)
“Some remarks on the convergence of adaptive finite element methods”

12.40 - 14.00 Lunch in the Claverton Rooms