Short Course on "Numerical Solution of Advection-Diffusion-Reaction Equations

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Lectures by Martin Berzins

Day 2 (Introductory, Martin Berzins):

Lecture 1 Finite element discretizations.

Part 1: Introduction to continuous Galerkin methods on regular and irregular grids. Stabilized Methods. Application to advection-diffusion reaction problems.

Part 2; Introduction to discontinuous Galerkin methods and advection diffusion reaction problems.

Day 4 (More advanced, Martin Berzins):

Part 3: Discontinuous Galerkin methods - two space dimensions, error estimates and large scale computations.

Part 4: Positivity Preserving Galerkin Methods for Transient Problems, comparisons with finite volume methods.

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Useful web pages with publications referenced in the lectures by Martin Berzins

CWI Amsterdam `http://www.cwi.nl/~willem/`

Rensselaer Polytechnic Institute Flaherty, Remacle et al. `http://www.cs.rpi.edu/~scorec/papers/`

Oxford University Computing Lab (Suli and Houston) also contains references to other sites

`http://web.comlab.ox.ac.uk/oucl/work/endre.suli/hyperbolic.html`

see also `http://www.mcs.le.ac.uk/~phouston/olfem/Olfem.html`

Chalmer University Finite Element Center (Johnson et al.) `http://www.phi.chalmers.se/preprints/`

Heidelberg Numerical Analysis Group (Rannacher et al.)

`http://gaia.iwr.uni-heidelberg.de/httpdoc/welcome.html`

References

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