

# Mark Ainsworth

**Professional Preparation** PhD Mathematics (1989). Durham University, UK. 1986-1989; BSc (Hons) Mathematics, *First class*. Durham University, UK. 1983-1986.

**Selected Appointments and Honours** 2012-Present *Professor of Applied Mathematics*, Brown University; 2004-2012 *The 1825 Chair Professor of Mathematics*, Strathclyde University, UK; 1998-2004 *Professor of Applied Mathematics*, Strathclyde University, UK; *LMS Whitehead Prize* (London Math Society), *J.L. Lions Prize for Computational Mathematics*, *SIAM Fellow*, *Fellow Royal Society of Edinburgh*, *Fellow Inst. Math. Applic.*.

**Synergistic Activities** Director of NAIS, 2010-2012. NAIS is a UK based research centre supported by £4.5M from EPSRC under contract EP/G036136/1 *Numerical Algorithms and Intelligent Software for the Evolving HPC Platform*. Organiser of meeting on *Scientific Computing at the Exascale*, 11th October 2011, London sponsored by London Mathematical Society; Membership of over 10 editorial boards including *SIAM Journal on Scientific Computing* (2001-present) *SIAM Journal on Numerical Analysis* (2012-present); Chair of *Biennial Conference on Numerical Analysis* held at Strathclyde University, June 2011, June 2013; Plenary speaker at *ENUMATH European Conference on Numerical Mathematics*, September 2015, Turkey.

## Selected Recent Publications

- [1] M. AINSWORTH, *A synthesis of a posteriori error estimation techniques for conforming, non-conforming and discontinuous Galerkin finite element methods*, Contemp. Math., 383 (2005), pp. 1–14.
- [2] —, *A framework for obtaining guaranteed error bounds for finite element approximations*, J. Comput. Appl. Math., 234 (2010), pp. 2618 – 2632.
- [3] M. AINSWORTH, G. ANDRIAMARO, AND O. DAVYDOV, *Bernstein-Bézier FEM and optimal assembly algorithms*, SIAM J. Sci. Comp., (2011), pp. 3087–3109.
- [4] M. AINSWORTH AND X. MA, *Non-uniform order mixed FEM approximation: implementation, post-processing, computable error bound and adaptivity*, J. Comput. Phys., 231 (2012), pp. 436–453.
- [5] M. AINSWORTH AND J. ODEN, *A posteriori error estimation in finite element analysis*, Pure and Applied Mathematics, Wiley-Interscience, John Wiley & Sons, New York, 2000.
- [6] M. AINSWORTH AND R. RANKIN, *Robust a posteriori error estimation for the nonconforming Fortin-Soulie finite element approximation*, Math. Comp., 77 (2008), pp. 1917–1939.
- [7] —, *Guaranteed computable error bounds for conforming and nonconforming finite element analyses in planar elasticity*, Internat. J. Numer. Methods Engrg., 82 (2010), pp. 1114–1157.

- [8] ———, *Guaranteed computable bounds on quantities of interest in finite element computations*, Internat. J. Numer. Methods Engrg., 89 (2012), pp. 1605–1634.
- [9] M. AINSWORTH AND B. SENIOR, *Aspects of an adaptive hp-finite element method: Adaptive strategy, conforming approximation and efficient solvers*, Comput. Methods Appl. Mech. Engrg., 150 (1997), pp. 65–87.
- [10] M. AINSWORTH AND T. VEJCHODSKÝ, *Fully computable robust a posteriori error bounds for singularly perturbed reaction-diffusion problems*, Numer. Math., 119 (2011), pp. 219–243.

**Recent Collaborators and Co-Editors** Allendes, Alejandro (Universidad Técnica Federico Santa María, Chile); Andriamaro, Gaelle (Strathclyde University, UK); Barrenechea, Gabriel R. (Strathclyde University, UK); Davydov, Oleg (Giessen University, Germany); Guzman, Johnny (Brown University); Karniadakis, George (Brown University); Ma, Xinhui (Abertay University, UK); Mihai, L. Angela (Cardiff University, UK); Rankin, Richard (Rice University, US); Sayas, Francisco-Javier (University of Delaware); Wajid, Hafiz Abdul (COMSATS Institute of Technology, Pakistan).

**Graduate and Postdoctoral Advisors and Advisees** Graduate Advisor: Craig, Alan W. (European Commission, Brussels); Post-doctoral Advisor: Oden, John T. (University of Texas at Austin, US); Graduate and Postdoctoral Advisors and Advisees: Allendes, Alejandro (Universidad Técnica Federico Santa María, Chile); Andriamaro, Gaelle (Strathclyde University, UK); Ma, Xinhui (Abertay University, UK); Mihai, L. Angela (Cardiff University, UK); Rankin, Richard (Rice University, US); Wajid, Hafiz Abdul (COMSATS Institute of Technology, Pakistan).