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Curriculum vitae et studiorum
Antonella Zanna

General information:

Name: Antonella Zanna Munthe-Kaas
Date and place of birth: September 22, 1970 in Bari-Carbonara (BA), Italy
Nationality: Italian

Address: Nattlandsrinden 117, Bergen
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Academic degrees: BA (University of Bari, Italy) with Honours in Mathematics, 1989–1993; PhD (University of Cambridge, U.K.) in Numerical Analysis, 1995–1998. Title of dissertation: "On the Numerical Solution of Isospectral Flows". Supervisor: Arieh Iserles, DAMTP, University of Cambridge.

Present employment:

- Post Doctorate Researcher at the Department of Computer Science (Institutt for Informatikk), University of Bergen.

Previous employment:

- High-school teacher in Mathematics, Bari and Molfetta, Jan–April 1994.
- University of Matera, instructor, March-July 1994.
- Supervising Cambridge University undergraduates for several colleges. Courses: Numerical Analysis IA, IB, IIA, IIB (Mathematics) 1995–1999, Numerical Analysis I, II, General and Diploma (Computer Science), 1996–1999.
- Research Fellow of Newnham College, University of Cambridge, U. K., 1997–1999.

Other courses taken:

- Summer school in Mathematics, University of Perugia (Italy), 1993, courses taken: Numerical Analysis and Partial Differential Equations.

- Advanced summer school in Numerical Analysis, Cortona (Italy), 1994.

Awards and prizes:

- Award from Bridgestone-Firestone, Bari, May 1994.
- Knight Prize for the essay *Numerical analysis of isospectral flows,* Cambridge, April 1996.
- Newnham College Marion Kennedy research studentship, Cambridge, July 1996.
- Leslie Fox Prize (second prize), Dundee, June 1997.

Invited talks at Conferences:

- "The method of iterated commutators for ODEs on Lie groups", Isaac Newton Institute, Cambridge, 1996.
- "Collocation and relaxed collocation for Lie-group ODEs", NSF-CBMS Regional Conference on the Numerical Analysis of Hamiltonian Differential Equations, Colorado School of Mines, June, 1997.
- "Numerical solution of Isospectral flows", LMS meeting, Surrey, July 1997.
- "Collocation and relaxed collocation for Lie-group ODEs", Young talent discovery programme, SciCADE, Grado (Italy), September 1997.
- "Lie-group methods for Isospectral flows" Oppdal, Norway, January 1998.
- "Lie-group methods for Isospectral flows", NODE, Arizona State University, Tempe (AZ) USA, April 1998.
- "Lie-group methods with application to integrable systems", Workshop on Integrable Systems, Leeds, March 1999.
- Short course on "Lie-group methods", LMS Durham Symposium on "Geometric Integration", 13–23 July 2000.

Other interesting activities:

- Invited member at the Foundations of Computational Mathematics (FoCM) semester, Mathematical Science Research Institute (MSRI), Berkeley CA, August-December 1998.
- Organizer of the Minicourses in Geometric Integration at the FoCM semester.
- Responsible for institute seminars, spring semester 2000, Institutt for informatikk, Universitet i Bergen.

Publications in refereed journals:

- M. P. Calvo, A. Iserles, and A. Zanna. Runge–Kutta methods for orthogonal and isospectral flows. *Appl. Numer. Math.*, 22:153–163, 1996.
- M. P. Calvo, A. Iserles, and A. Zanna. Runge–Kutta methods on manifolds. In D. F. Griffiths and G. A. Watson, editors, *A. R. Mitchell's 75th Birthday Volume*, pages 57–70. World Scientific, Singapore, 1996.
- M. P. Calvo, A. Iserles, and A. Zanna. Numerical Solution of Isospectral Flows. *Math. of Comp.*, 66:1461–1486, 1997.
- M. P. Calvo, A. Iserles, and A. Zanna. Semi-explicit methods for isospectral flows. Technical Report NA1997/16, DAMTP, University of Cambridge, 1997. To appear in *Adv. Comp. Math.*
- M. P. Calvo, A. Iserles, and A. Zanna. Conservative methods for the Toda lattice equations. *IMA J. Numer. Anal.*, 19(4):509–523, 1999.
- A. Iserles, R. McLachlan, and A. Zanna. Approximately preserving symmetries in numerical integration. *Euro. J. Appl. Math.*, 10:419–445, 1999.
- A. Iserles, H. Z. Munthe-Kaas, S. P. Nørsett and A. Zanna. Lie-group methods. *Acta Numerica*, Cambridge University Press, pages 215–352, 2000.
- A. Iserles and A. Zanna. Qualitative numerical analysis of ordinary differential equations. In M. Shub J. Renegar and S. Smale, editors, *Lectures in Applied Mathematics*, volume 32, pages 421–442. American Maths Soc., 1996.
- A. Iserles and A. Zanna. A scalpel, not a sledgehammer: Qualitative approach to numerical mathematics. *CWI Quarterly*, 9:103–112, 1996.
- A. Iserles and A. Zanna. On the dimension of certain graded Lie algebras arising in geometric integration of differential equations. *LMS J. Comp. Math.*, 3:44-75, 2000.
- A. Iserles and A. Zanna. Preserving algebraic invariants with Runge–Kutta methods. Technical Report NA1999/12, DAMTP, University of Cambridge, 1999. To appear in *J. Comp. Appl. Math. 2000.*
- H. Munthe-Kaas and A. Zanna. Numerical integration of differential equations on homogeneous manifolds. In F. Cucker, editor, *Foundations of Computational Mathematics*, pages 305–315. Springer Verlag, 1997.
- A. Zanna. The Fer expansion and time symmetry: a Strang-type approach. Technical Report NA1998/14, DAMTP, 1998. To appear.
- A. Zanna. Collocation and relaxed collocation for the Fer and the Magnus expansion. *SIAM J. Num. Anal.*, 36(4):1145–1182, 1999.
- A. Zanna and H. Munthe-Kaas. Iterated commutators, Lie's reduction method and ordinary differential equations on matrix Lie groups. In F. Cucker, editor, *Foundation of Computational Mathematics*, pages 434–441. Springer-Verlag, 1997.

Technical reports and work in progress:

- H. Munthe-Kaas and A. Zanna. Notes on semidirect products of Lie groups and applications. In preparation.
- H. Munthe-Kaas, G. R. Quispel and A. Zanna. Application of symmetric spaces and Lie triple systems in numerical analysis. In preparation.
- H. Munthe-Kaas, G. R. Quispel and A. Zanna. The polar decomposition on Lie groups with involutive automorphisms. Technical Report no. 191, May 2000, Department of Informatics, University of Bergen.
- A. Zanna. The method of iterated commutators for ordinary differential equations on Lie groups. Technical Report NA1996/12, DAMTP, University of Cambridge, 1996.
- A. Zanna. Lie-group Methods for Isospectral Flows. Technical Report NA1997/02, DAMTP, University of Cambridge, 1997.
- A. Zanna. Recurrence relation for the factors in the the polar decomposition on Lie groups. Technical Report no. 192, May 2000, Department of Informatics, University of Bergen.
- A. Zanna, K. Engø, and H. Z. Munthe-Kaas. Adjoint and selfadjoint Lie-group methods. Technical Report NA1999/02, DAMTP, University of Cambridge, 1999. Submitted.