

Curriculum Vitae

Annalisa Buffa

Born: 02.14.1973, Milano, Italy

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RESEARCH INTERESTS

Main research field: numerical analysis, discretization of partial differential equations, finite elements techniques.

Main keywords: IsoGeometric Analysis, Fully compatible discretization of PDEs, Integral equations on nonsmooth manifolds, Functional theory for Maxwell equations in nonsmooth domains, Finite element techniques for Maxwell equations, Nonconforming domain decomposition methods, Asymptotic analysis, Stabilization techniques for finite element discretizations.

EDUCATION

- 2000, Dec Ph.D. in Mathematics, *Università degli Studi di Milano*. Thesis: *Some numerical and theoretical problems in computational electromagnetism*. Advisor: Prof. Franco Brezzi.
- 1996, Jul. Laurea in Computer Engineering (Ingegneria Informatica), *Università degli Studi di Pavia*, with a mark of 110/110 and honors. Thesis: *Filtraggio di immagini e problemi di evoluzione non lineare*. Advisor: Prof. Franco Brezzi.

ACADEMIC AND RESEARCH EMPLOYMENT

- Jan. 2004 onwards Research director (equivalent to *Professor*) at *Istituto di Matematica Applicata e Tecnologie Informatiche*, Consiglio Nazionale delle Ricerche (CNR), Pavia, Italy.
- Fall 2005 Invited researcher (J. Tinsley Oden Faculty Fellowship Research Program). *ICES*, University of Texas at Austin, USA.
- Fall 2004 Invited researcher (J. Tinsley Oden Faculty Fellowship Research Program). *ICES*, University of Texas at Austin, USA.
- Spring 2004 Invited professor. Laboratoire J.L. Lions, Université Pierre et Marie Curie, Paris, France.
- Jul. 2001 - Jan. 2004 Researcher at *Istituto di Matematica Applicata e Tecnologie Informatiche*, Consiglio Nazionale delle Ricerche (CNR), Pavia, Italy.
- Oct. 2002 - Sept. 2003 Invited researcher. Centre de Mathématiques Appliquées, École Polytechnique, Palaiseau, France.
- Spring 2002 CNRS Invited researcher. Laboratoire d'Analyse Numérique, Université Pierre et Marie Curie, Paris, France.
- Apr 2001 - Dec. 2001 Post-doctoral fellowship. Seminar für Angewandte Mathematik, ETH, Zürich, Switzerland.

I was invited for short periods to numerous Universities during the last years. Among others: Aachen, Mc-Gill Montreal, Oslo, Cambridge, Max-Planck Institute Leipzig, Stuttgart, WIAS Berlin, IMA Minneapolis.

AWARDS

- 12/2007 **ERC Starting Independent Research Grant** , awarded by the European Research Council for the project: *GEOPDES: Innovative compatible discretization techniques for Partial Differential Equations*.
- 09/2007 **Bartolozzi Prize**, *Unione Matematica Italiana*.
- 02/2007 **John Todd Fellowship Prize**, Mathematisches Forschungsinstitut, Oberwolfach, Germania
- 1991-2000 During my studies, I was awarded a number of fellowships by Istituto Lombardo Accademia di Scienze e Lettere, SIMAI (Italian Society of Applied and Industrial Mathematics) and I was a fellow of Collegio Ghislieri.

INVITED LECTURES, SEMINARS, COLLOQUIA

Plenary Lectures

- 2009 Keynote speaker at the 23rd Biennial Numerical Analysis Conference, Glasgow, UK.
- 2008 “Invited parallel lecture” (45 minutes), Fifth European Congress of Mathematics, Amsterdam, Netherlands
- 2007 *Conferenza generale* at XVIII Congress, *Unione Matematica Italiana*, Bari, Italy
- 2007 8th International Conference on Mathematical and Numerical Aspects of Waves, WAVES 2007, University of Reading, Great Britain.
- 2007 International Conference on SCientific Computation And Differential Equations, SciCADE 2007, Saint-Malo, France.
- 2005 XIX Congreso de ecuaciones diferenciales y aplicaciones (CEDYA), Madrid, Spain.
- 2005 ENUMATH: The European Conference on Numerical Mathematics and Advanced Applications, Santiago de Compostela, Spain.
- 2002 LMS Symposium on computational methods for wave propagation in direct scattering, Durham, Great Britain.
- 2001 GAMM-Workshop: Computational electromagnetics, Kiel, Germany.
- 2000 Convegno RIFORMA, Genova, Italy.
- 1999 DD12: Twelve International Conference on Domain Decomposition, Chiba, Japan.
- 1999 XVI Congresso UMI, 1999, Napoli, Italy.

Invited Lectures in Workshops and Colloquia

- 2009 Workshop: *Compatible and innovative discretizations for PDEs*, a workshop on the occasion of Ragnar Winther’s 60th birthday, Oslo, Norway.
- 2007 Workshop: *High-order methods for computational wave propagation and scattering*, AIM Research Conference Center (ARCC), Palo Alto, California.
- 2007 Workshop: *Computational Electromagnetism and Acoustics*, Mathematisches Forschungsinstitut, Oberwolfach, Germany.
- 2006 Birs Symposium: *Advances in Computational Scattering*, Banff, Alberta, Canada.
- 2005 ICEAA. Invited Session *Computation Electromagnetics*, Turin, Italy.
- 2005 Workshop: *New trends in Simulation and Control of PDEs*, WIAS Institute, Berlin, Germany.
- 2004 Workshop: *Computational Electromagnetism*, Mathematisches Forschungsinstitut, Oberwolfach, Germany.

- 2002 Workshop: *New trends in boundary elements*, Mathematisches Forschungsinstitut, Oberwolfach, Germany.
- 2002 Workshop: *Analytical and numerical treatment of singularities in partial differential equations*, Mathematisches Forschungsinstitut, Oberwolfach, Germany.
- 2002 Workshop: *Problems in electromagnetism*, Università degli Studi di Trento, Italy.
- 2000 Colloquium *CRESPO* ENSTA-INRIA, Paris, France.
- 1999 Workshop: *Domain decomposition and multifields theories*, Mathematisches Forschungsinstitut, Oberwolfach, Germany.

Seminars (incomplete list)

- 2005 Department of Applied Mathematics and Theoretical Physics Centre for Mathematical Sciences, University of Cambridge, England.
- 2005 Electrical Engineering Department, Università degli Studi di Pisa, Italy.
- 2005 Centre of Mathematics for Applications, University of Oslo, Norway.
- 2004 Universität Zürich, Institut für Mathematik, Switzerland.
- 2004 Centre of Mathematics for Applications, University of Oslo, Norway.
- 2003 ICES Institute for Computational Engineering and Sciences, University of Texas at Austin.
- 2003 Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie, Paris, France.
- 2002 Institut für Geometrie und Praktische Mathematik, RWTH Aachen, Germany.
- 2002 CERMICS, Marne-la-Vallée, France.
- 2002 Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie, Paris, France.
- 2001 Dipartimento di Matematica, Università degli studi di Trento, Italy.
- 1999 Seminar für Angewandte Mathematik, ETH, Zürich, Switzerland.
- 1999 Mathematisches Institut, Universität Tübingen, Germany.
- 1999 École Polytechnique Fédérale de Lausanne, Switzerland.
- 1998 Mathematisches Institut, Universität Augsburg, Germany.

TEACHING

Undergraduate and M.Sc. level

- Lecturer** Spring 2009
Università degli Studi di Pavia, Facoltà di Scienze, Course: “Calcolo Numerico per le scienze chimiche”.
- Lecturer** Fall 2007
Università degli Studi di Pavia, Facoltà di Scienze, Course: “Istituzioni di Matematiche”.
- Lecturer** Fall 2006
Università degli Studi di Pavia, Facoltà di Scienze, Course: “Istituzioni di Matematiche”.
- Lecturer** Spring 2004
Université Pierre et Marie Curie, Paris VI, Course: DEUG SCM13 “Algèbre”.
- Head Assistant** Fall 2001
Seminar für Angewandte Mathematik, ETH, Zürich, Switzerland. Course: Linear Algebra
- Head Assistant** Fall 1996- 2000
Dipartimento di Matematica, Pavia, Italy. Courses: Calculus A, Calculus B, Analysis.

Lectures in Ph.D. schools and courses

- Lecturer** Fall 2004
Domain decomposition techniques for elliptic problems
Ph.D. course, Università degli Studi di Pavia, Italy. PhD program: Dottorato di Matematica e Statistica.
- Lecturer** Spring 2003
Boundary integral equation methods for the Maxwell equations
Ph.D. Course, Institut für Angewandte Analysis und Numerische Simulation, Stuttgart, Germany.
- Lecturer** Fall 2001
Time harmonic Maxwell Equations: theory and numerics
Ph.D. and M.Sc. course, Seminar für Angewandte Mathematik, ETH, Zürich, Switzerland.

STUDENT ADVISING

Post-Doctoral students

1. Rafael Vasquez. 2008-2009. *Isogeometric analysis in electromagnetics*
2. Durkbin Cho. 2008-2009. *The use of T-splines in isogeometric analysis.*
3. Carlo De Falco. 2009-2010. *Isogeometric analysis for saddle point problems*
4. Mukesh Kumar. 2009-2010. *Computation aspects of Isogeometric analysis*

Ph.D. students

1. Paola Antonietti. Thesis subject: *Domain Decomposition techniques and Preconditioning for the Discontinuous Galerkin method*, 2003-present. Università degli Studi di Pavia. Co-advisor: Ilaria Perugia.

Co-advising - Ph.D. students

1. Elisa Vacca. Thesis subject: *Galerkin Approximation for Highly Conductive Fractal Layers*. Università degli Studi di Roma *La Sapienza*, 2003-2006. Main advisor: Prof. M.A. Vivaldi.
2. Sebastian Ossandon. Thesis subject: *Mathematical modeling, numerical analysis and computational simulation of complex phenomena of propagation of acoustic, elastic and electromagnetic waves*, 2006, École Polytechnique, Palaiseau, France. Main advisors: Prof. J.C. Nédélec, M. Duran.

PROFESSIONAL ACTIVITIES

Editorial Board

- 01/2008 - *Bollettino dell'Unione Matematica Italiana*, Associate Editor
09/2007 - *IMA Journal of Numerical Analysis*, Associate Editor

Reviewer activity

- 12/2008 Reviewer for the Austrian Science Fund.
10/2008 Reviewer for the Suisse National Science Foundation (SNSF).
09/2007 Reviewer for the FONDECYT (Chilean Research Fund Council)
11/2007 Member of the committee for the Ph.D. grants competitions, Pavia.
04/2006 Member of the committee for the employment of a Research Director, Roma.

Organization of invited sessions, workshops and conferences

- 2006-2008 Co-organizer of the Applied Mathematics Seminars, IMATI-CNR, Pavia.
- 2005 Member of the Organizing Committee for the third Finite Element Fair, Pavia, Italy.
- 2001 Member of the Organizing Committee for the ENUMATH Conference, Ischia, Italy.
- 2000-2008 (Co-)Organizer of several minisymposia in international conferences.

External Ph.D. thesis committee member

1. Jan Sollic, Université Pierre et Marie Curie, Paris, France, 2004.
2. Erel Jamelot, ENSTA, Paris, France, 2005.
3. Pascal Grob, Université de Dauphine, Paris, France, 2006.

RESEARCH FUNDING

ERC Starting Independent Grant 2008-2011, GEOPDES n. 205004

Innovative compatible discretization techniques for Partial Differential Equations

Principal Investigator. Budget: 750.000 euro

www.imati.cnr.it/geopdes

Progetto PRIN, n. 2006013187 *Metodi numerici avanzati per il calcolo scientifico*, 2006-2008.

Role: participant. Coordinator: Prof. Franco Brezzi.

EC-IHP Network *Breaking Complexity: Non Linear Approximation and adaptivity: Breaking Complexity in the Numerical Modelling and Data Representation*. EU's Sixth Framework Programme, 2002-2006

Role: participant. Main contractor: CNR-Pavia.

Italian project FIRB, *Metodi avanzati di previsione e di ottimizzazione della distribuzione di campo elettromagnetico per sistemi di telefonia mobile cellulare GSM e UMTS in ambiente urbano*.

Role: participant. Main contractor: Università degli Studi di Genova.

Italian projects PRIN-COFIN, financed by MIUR every two years 1998-2006.

Role: participant.

PUBLICATIONS

Journal papers

- [J-1] A. BUFFA, I. PERUGIA, T. WARTBURTON, *The Mortar-Discontinuous Galerkin Method for the 2D Maxwell Eigenproblem*. Tec. Rep. 2008 IMATI-CNR 8PV08/10/0. In press on J. Sci. Comp. Electronic publication: <http://www.springerlink.com/content/85055g4h55622j19/>
- [J-2] F. BREZZI, A. BUFFA, *Innovative mimetic discretizations for electromagnetic problems*. Tec. Rep. 2008 IMATI-CNR 11PV08/10/0. In press on J. Comp. Appl. Math. (2008).
- [J-3] F. BREZZI, A. BUFFA, K. LIPNIKOV, *Mimetic finite differences for elliptic problems*. Tec. Rep. 2008 IMATI-CNR 10PV08/10/0. Math. Model. Numer. Anal. (2008) Published Online: 5 December 2008 DOI: 10.1051/m2an:2008046.
- [J-4] M. JI, G. FERRARI-TRECCATE, M. EGERSTEDT, A. BUFFA *Containment Control of Mobile Networks*, IEEE Trans. Automat. Control 53 (2008), no. 8, 1972–1975.
- [J-5] A. BUFFA, P. MONK *Error Estimates for the Ultra Weak Variational Formulation of the Helmholtz Equation*, M2AN Math. Model. Numer. Anal. (2008) n 42, pp 925-940.

- [J-6] A. BUFFA, CH. ORTNER *Compact embeddings of broken Sobolev spaces and applications*, IMA Journal of Numer. Anal. (2008) Advance Access published on July 4, 2008; doi: doi:10.1093/imanum/drn038.
- [J-7] F. ANDRIULLI, K. COOLS, H. BAGCI, F. OLYSLAGER, A. BUFFA, S. CHRISTIANSEN, E. MICHIELSEN, A *Multiplicative Calderon Preconditioner for the Electric Field Integral Equation*. IEEE Transactions on Antennas and Propagation, Special Issue on Large and Multiscale Computational Electromagnetics, 56 (2008), no. 8, part 1, 2398–2412.
- [J-8] F. AURICCHIO, L. BEIRO DA VEIGA, A. BUFFA, C. LOVADINA, A. REALI, G. SANGALLI, *A fully ‘locking-free’ isogeometric approach for plane linear elasticity problems: a stream function formulation*, Comput. Methods Appl. Mech. Engrg. (2007) n. 197, 160-172.
- [J-9] P. BAGNERINI, A. BUFFA AND A. CANGIANI, *A fast algorithm for determining the propagation path of multiple diffracted rays*, IEEE Trans. Antennas and Propagation (2006). to appear.
- [J-10] A. BUFFA AND S. SAUTER, *On the acoustic single layer potential: stabilization and Fourier analysis*, SIAM J. Sci. Comput. (2006). to appear.
- [J-11] A. BUFFA AND S. H. CHRISTIANSEN, *A dual finite element complex on the barycentric refinement*, Math. of Comp. (2006). to appear.
- [J-12] A. BUFFA, T.J. HUGHES, AND G. SANGALLI *Analysis of a Multiscale Discontinuous Galerkin Method for Convection Diffusion Problems*, SIAM J. Numer. Anal. (2006). to appear.
- [J-13] A. BUFFA AND I. PERUGIA, *Discontinuous Galerkin approximation of the Maxwell eigenproblem*, SIAM J. Numer. Anal. (2006). to appear.
- [J-14] A. BUFFA, P. HOUSTON, AND I. PERUGIA, *Discontinuous galerkin computation of the Maxwell eigenvalues on simplicial meshes*, J. Comput. Appl. Math. (2006). In Press, Corrected Proof, Available online 7 July 2006.
- [J-15] G. FERRARI-TRECCATE, A. BUFFA, AND M. GATI, *Analysis of Coordination in Multi-Agent Systems through Partial Difference Equations*, IEEE Trans. Automatic Control, 51 (2006), n. 6, pp 1058–1063.
- [J-16] TH.J. HUGHES, G. SCOVAZZI, P. BOCHEV AND A. BUFFA, *A Multiscale Discontinuous Galerkin Method with the Computational Structure of a Continuous Galerkin Method*, Comput. Meth. Appl. Mech. Engrg. 195 (2006), no. 19-22, pp 2761–2787.
- [J-17] P. ANTONIETTI, A. BUFFA, AND I. PERUGIA, *Discontinuous Galerkin approximation of the Laplace eigenproblem*, Comput. Methods Appl. Mech. Engrg. 195 (2006), no. 25-28, pp 3483–3503.
- [J-18] P. BAGNERINI, A. BUFFA, AND E. VACCA, *Finite elements for a prefractal transmission problem*, C. R. Math. Acad. Sci. Paris, 342 (2005), pp 211-214.
- [J-19] A. BUFFA AND S. H. CHRISTIANSEN, *A dual finite element complex on the barycentric refinement*, C. R. Math. Acad. Sci. Paris, 340 (2005), pp. 461–464.
- [J-20] A. BUFFA, M. COSTABEL, M. DAUGE, *Algebraic convergence for anisotropic edge elements in polyhedral domains*. Numer. Math. 101 (2005), no. 1, pp. 29–65.
- [J-21] A. BUFFA AND R. HIPTMAIR, *Regularized combined field integral equations*, Numer. Math., 100 (2005), pp. 1–19.
- [J-22] L. DEMKOWICZ AND A. BUFFA, H^1 , $H(\text{curl})$ and $H(\text{div})$ -conforming projection-based interpolation in three dimensions. *Quasi-optimal p -interpolation estimates*, Comput. Methods Appl. Mech. Engrg., 194 (2005), pp. 267–296.
- [J-23] A. BUFFA, *Remarks on the discretization of some non-positive operator with application to heterogeneous Maxwell problems*, SIAM J. Numer. Anal. (2005), 43 (1), pp. 1-18.

- [J-24] A. BUFFA, R. HIPTMAIR, *A coercive combined field integral equation for electromagnetic scattering*, SIAM J. Numer. Anal (2003), 42 (2) , pp 621-640.
- [J-25] A. BUFFA, M. COSTABEL, M. DAUGE, *Anisotropic regularity results for the Laplace and Maxwell operators in a polyhedron*, C. R. Acad. Sci. Paris Sér. I Math., 336 (2003), no. 7, pp 565–570.
- [J-26] F. BOUILLAUT, A. BUFFA, Y. MADAY, F. RAPETTI, *The mortar edge element method in three dimensions: application to magnetostatics*, SIAM J. Sci. Comput., 24/4 (2003), pp. 1303–1327.
- [J-27] A. BUFFA, S.H. CHRISTIANSEN, *The electric field integral equation on Lipschitz screens: definition and numerical approximation*, Numer. Mathem., 94/2 (2003), pp. 229–267.
- [J-28] A. BUFFA, M. COSTABEL, D. SHEEN, *On traces for $\mathbf{H}(\mathbf{curl}, \Omega)$ for Lipschitz domains*, J. Math. Anal. Appl., 276 (2002), pp. 845–876.
- [J-29] A. BUFFA, R. HIPTMAIR, T. VON PETERSDORFF, C. SCHWAB, *Boundary element methods for Maxwell transmission problems in Lipschitz domains*, Numer. Mathem., 95/3 (2003), pp. 459–485.
- [J-30] F. BOUILLAUT, A. BUFFA, Y. MADAY, F. RAPETTI, *Simulation of a magneto-mechanical dumping machine: analysis discretisation, results*, Comput. Meth. Appl. Mech. Engrg., 191/23-24 (2002), pp. 2587–2610.
- [J-31] A. BUFFA, *Hodge decompositions on the boundary of a polyhedron: the multi-connected case*, Math. Meth. Model. Appl. Sci., 11 (2001), pp. 1491–1504.
- [J-32] A. BUFFA, M. COSTABEL, C. SCHWAB, *Boundary element methods for Maxwell equations in non-smooth domains*, Numer. Mathem., 92/4 (2002), pp. 679-710.
- [J-33] A. BUFFA, *Error estimate for a stabilised domain decomposition method with nonmatching grids*, Numer. Mathem., 90/4 (2002), pp. 617-640.
- [J-34] F. BEN BELGACEM, A. BUFFA, Y. MADAY, *The mortar element method for Maxwell equations: first results*, SIAM J. Num. Anal., 39 (2001), pp. 880–901.
- [J-35] A. BUFFA, G. GEYMONAT, *On traces of functions in $W^{2,p}(\Omega)$ for Lipschitz domains in \mathbb{R}^3* , C. R. Acad. Sci. Paris Sér. I Math., 332 (2001), pp. 699–704.
- [J-36] A. BUFFA, Y. MADAY, F. RAPETTI, *An electromagnetic dumping machine: model, analysis and numerics*, Boll. Unione Mat. Ital. Sez. B Artic. Ric. Mat., 8 (2001), pp. 121–129.
- [J-37] ———, *A sliding mesh-mortar method for a two-dimensional eddy currents model of electric engines*, M2AN Math. Model. Numer. Anal., 35 (2001), pp. 191–228.
- [J-38] A. BUFFA, P. CIARLET, JR., *On traces for functional spaces related to Maxwell's equations. Part I: An integration by parts formula in Lipschitz polyhedra*, Math. Meth. Appl. Sci., 21 (2001), pp. 9–30.
- [J-39] ———, *On traces for functional spaces related to Maxwell's equations. Part II: Hodge decompositions on the boundary of Lipschitz polyhedra and applications*, Math. Meth. Appl. Sci., 21 (2001), pp. 31–48.
- [J-40] A. BUFFA, Y. MADAY, F. RAPETTI, *Calculation of eddy currents in moving structures by sliding mesh-finite element method*, IEEE Trans. on Magn., 36 (2000), pp. 1360–1363.
- [J-41] F. RAPETTI, F. BOUILLAUT, L. SANTANDREA, A. BUFFA, Y. MADAY, A. RASEK, *Calculation of eddy currents with edge elements on non-matching grids in moving structures*, IEEE Trans. on Magn., 36 (2000), pp. 1356–1359.
- [J-42] H. AMMARI, A. BUFFA, J. C. NÉDÉLEC, *A justification of Eddy Currents model for Maxwell equations*, SIAM J. Appl. Math., 60 (2000), pp. 1805–1823.

- [J-43] F. RAPETTI, A. BUFFA, Y. MADAY, F. BOUILLAUT, *Simulation of a coupled magneto-mechanical system through the sliding mesh-mortar element method*, COMPEL, 19 (2000), pp. 332–340.
- [J-44] F. BEN BELGACEM, A. BUFFA, Y. MADAY, *The mortar method for the Maxwell's equations in 3D*, C. R. Acad. Sci. Paris Sér. I Math., 329 (1999), pp. 903–908.
- [J-45] A. BUFFA, *Image filtering, mean curvature, Dirichlet problems*, Appl. Math. Letters, 12 (1999), pp. 131–135.
- [J-46] ———, *The dirichlet problem for generalized mean curvature flows*, Appl. Anal., 67 (1997), pp. 137–156.

Books and Book Chapters

- [B-1] F. BREZZI, A. BUFFA, S. CORSARO, AND A. MURLI, editors. *Numerical Mathematics and Advanced Applications*, Proceedings of ENUMATH 2001 Conference, Ischia, Italie, July 2001. Springer-Italia, 2003.
- [B-2] A. BUFFA, R. HIPMAIR, *Galerkin Boundary Element Methods for Electromagnetic Scattering*, dans *Topics in Computational Wave Propagation and Inverse Problems*, M. Ainsworth *et al.*, eds., Vol. 31, pp. 83-124, Springer-Verlag, 2003.
- [B-3] A. BUFFA, Y. MADAY, F. RAPETTI, *Applications of the mortar element method to electromagnetic moving structures*, dans *Computational electromagnetics*, C. Carstensen *et al.*, eds., Vol. 28, pp 35-50, Lectures notes in Computational Science and Engineering, Springer-Verlag, 2003.
- [B-4] A. BUFFA, *Trace theorems for functional spaces related to Maxwell equations: an overview*, in *Computational Electromagnetics*, C. Carstensen *et al.*, eds., vol. 28, pp. 23-34, Lectures notes in Computational Science and Engineering, Springer-Verlag, 2003.

Recent Conference Proceedings

- [C-1] A. BUFFA, *Compatible discretizations in two dimensions*, A. Bermúdez de Castro *et al.*, eds., Numerical Mathematics and advanced Applications, Proceedings of ENUMATH 2005 July 18-22, 2005, Santiago de Compostela, Spain. pp. 3-21. Springer-Verlag Berlin - Heidelberg (2006).
- [C-2] A. BUFFA AND I. PERUGIA, *Discontinuous Galerkin approximation of eigenvalue problems*, Proceeding of the Third M.I.T. Conference on Computational Fluid and Solid Mechanics, June 14-17 (2005) Cambridge MA, USA (Elsevier).
- [C-3] G. FERRARI-TRECATE, A. BUFFA AND M. GATI, *Analysis of coordination in multi-agent systems through Partial difference Equations. Part I: The Laplacian control*, 16th IFAC World Congress on Automatic Control, (2005).
- [C-4] G. FERRARI-TRECATE, A. BUFFA AND M. GATI, *Analysis of coordination in multi-agent systems through Partial difference Equations. Part II: Non-linear control*, 16th IFAC World Congress on Automatic Control, (2005).