

## CURRICULUM VITÆ

Alberto Valli

**Date of birth:** 24/8/1953

**Place of birth:** Castelnovo ne'Monti (Reggio Emilia), Italy

### Curriculum Studiorum

1975/76 – 1976/77 Postgraduate student, Scuola Normale Superiore di Pisa, Italy

1975 Degree in Mathematics, University of Pisa, Italy (Advisor: Prof. Giovanni Prodi)

### Academic and administrative positions

1987/88 – present Full Professor, University of Trento

1990/91 Senior Fellow, AHPCRC, University of Minnesota, Minneapolis, U.S.A.

1982/83 – 1986/87 Associate Professor, University of Trento

1979/80 – 1981/82 Reader, University of Trento

1977/79 Assistant, University of Trento

2007 – 2012 Director of the Ph.D. Program in Mathematics, University of Trento

1999 – 2005 Director of the Department of Mathematics, University of Trento

1993 – 1997 Director of the Ph.D. Program in Mathematics, University of Trento

1988 – 1990 Director of the Department of Mathematics, University of Trento

2008 – 2014 Member of the Administrative Board (CdA), Opera Universitaria of Trento

2006 – 2008 Member of the Administrative Board (CdA), University of Trento

1984 – 1987 Member of the Administrative Board (CdA), University of Trento

2017 – present Member of the Scientific Committee of Fondazione CIME Roberto Conti (Centro Internazionale Matematico Estivo), Florence

1995 – 1999 Member of the Town Council of Trento

### Teaching activity

2016/17 Calculus I (Engineering, Trento); (1st semester) Calculus II (Engineering, Trento; one-half of the course); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2015/16 Calculus I (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2009/10 – 2014/15 Calculus I (Engineering, Trento); (1st semester) Calculus II (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2008/09 Calculus I (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2006/07 – 2007/08 Calculus I (Engineering, Trento); (1st semester) Calculus I (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2005/06 Calculus I (Engineering, Trento); (1st semester) Calculus I (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento); (2nd semester) Partial Differential Equations, Numerical Approximation and Domain Decomposition Methods (Short course for the PhD program, Department of Physics, Parma)

2004/05 Calculus I (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2003/04 Calculus I (Engineering, Trento); (1st semester) Calculus I (Engineering, Trento); (1st semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2002/03 Calculus II (Engineering, Trento); (1st semester) Calculus I (Engineering, Trento); (2nd semester) Mathematical Methods for Engineering (Course for the PhD program, Department of Environmental Engineering, Trento)

2001/02 Calculus II (Engineering, Trento); (1st semester) Numerical Analysis (Engineering, Trento); (2nd semester) Calculus II (Engineering, Trento); (2nd semester) Finite Element Methods for PDEs (Course for the PhD program, Department of Environmental Engineering, Trento)

2000/01 Calculus II (Engineering, Trento); (1st semester) Numerical Analysis (Engineering, Trento); (1st semester) Finite Element Methods for PDEs (Course for the PhD program, Department of Environmental Engineering, Trento)

1999/2000 Calculus I (Engineering, Trento); (1st semester) Numerical Analysis (Engineering, Trento)

1998/99 Calculus I (Engineering, Trento); (1st semester) Finite Element Methods for PDEs (Short course for the PhD program, Department of Mathematics, Trento); (2nd semester) Numerical Approximation of Linear PDEs (Mathematics, Trento); (2nd semester) Finite Element Methods for PDEs (Short course for the PhD program, Department of Mathematics, Pisa)

1997/98 Calculus II (Engineering, Trento); (2nd semester) Numerical Approximation of Linear PDEs (Mathematics, Trento)

1994/95 – 1996/97 Numerical Approximation of Linear PDEs (Mathematics, Trento); Calculus II (Engineering, Trento)

1993/94 Numerical Approximation of Linear PDEs (Mathematics, Trento); Calculus I (Physics, Trento)

1992/93 Finite Elements for Linear PDEs (Mathematics, Trento); (2nd semester) Finite Differences for Linear PDE (Mathematics, Trento)

1991/92 Finite Elements for Linear PDEs (Mathematics, Trento); (1st semester) Advanced PDEs (Mathematics, Trento)

1987/88 – 1989/90 Finite Elements for Linear PDEs (Mathematics, Trento)

1986/87 Calculus I (Engineering, Trento); Calculus II (Engineering, Trento)

1985/86 Calculus I (Engineering, Trento)

1984/85 Calculus II (Physics and Mathematics, Trento)

1982/83 – 1983/84 Calculus II (Engineering, Trento)

1980/81 – 1981/82 Calculus II (Engineering, Trento); Exercitation of Calculus II (Physics and Mathematics, Trento)

1979/80 Calculus II (Engineering, Trento); Exercitation of Geometry II (Physics and Mathematics, Trento)

1978/79 (2nd semester) Exercitation of Calculus II (Engineering, Trento)

1977/78 Exercitation of Calculus II (Physics and Mathematics, Trento)

1976/77 (1st semester) Exercitation of Geometry (Informatics, Pisa); (2nd semester) Exercitation of Calculus I (Informatics, Pisa)

### Research fields

Numerical approximation of partial differential equations (especially in fluid dynamics and electromagnetism). Finite element method. Domain decomposition method.

Theoretical aspects of partial differential equations (existence and uniqueness theorems, qualitative properties of the solutions).

### Visiting positions

i) Visiting professor at the University of: Paris Sud (Orsay), France (four months, 1978/79); Alger, Algeria (one week, 1979); Bonn, West Germany (one week, 1980); Karlsruhe, West Germany (two weeks, 1984); Lausanne, Switzerland (one week, 1990); Minnesota (Minneapolis), USA (ten months, 1990/91); Madrid (Complutense), Spain (one week, 1995); Lausanne, Switzerland (two weeks, 1999); Lausanne, Switzerland (two weeks, 2000); Berlin (TUB), Germany (three weeks, 2016).

ii) Visiting at CRS4 Cagliari, Italy (one week, 1993).

## Courses and talks

i) Invited courses at: Short Course on Numerical Simulation in Electromagnetism and Industrial Applications, Santiago de Compostela (Spain, 2010); i-MATH School on Coupled PDEs in Multiphysics and Industrial Applications, Castro Urdiales (Spain, 2010); Second Short Course on Numerical Simulation in Electromagnetism and Industrial Applications, Santiago de Compostela (Spain, 2011); Short Course on Topics in Computational Electromagnetism, Santiago de Compostela (Spain, 2013).

ii) Invited talks at the University of: Trento, Italy (1977); Paris Sud (Orsay), France (1979); Alger, Algeria (1979); Bonn, West Germany (1980); Milano (Politecnico), Italy (1982); Pisa (Scuola Normale), Italy (1982); Firenze, Italy (1982); Roma (Tor Vergata), Italy (1983); Pisa (Scuola Normale), Italy (1983); Karlsruhe, West Germany (1984); Pavia, Italy (1985); Ferrara, Italy (1987); Roma (La Sapienza), Italy (1987); L'Aquila, Italy (1987); Parma, Italy (1988); Pisa, Italy (1990); Wisconsin (Madison), USA (1990); Minnesota (Minneapolis), USA (1990 and 1991); Paris XII (Creteil), France (1994); Madrid (Complutense), Spain (1995); Parma, Italy (1995); Pisa, Italy (1996); Zürich, Switzerland (1996); Firenze, Italy (1996); Roma, Italy (1996); Pisa, Italy (1998); Paris IX (Orsay), France (1998); Linz, Austria (2000); Pisa, Italy (2005); Torino, Italy (2006); Pisa, Italy (2008); Concepcion, Chile (2013); Innsbruck, Austria (2014); Nice, France (2015); Berlin (TUB), Germany (two talks, 2016).

iii) Participant as invited speaker at the Conference: Equadiff 6, Brno (Czechoslovakia, 1985); Fluidodynamics, Pisa (Italy, 1987); Equadiff 87, Xanthi (Greece, 1987); EVEQ 88, Stoky (Czechoslovakia, 1988); The Navier–Stokes Equations: Theory and Numerical Methods, Oberwolfach (West Germany, 1988); Theoretical Fluid Mechanics and Applications, Trieste (Italy, 1989); Nonlinear Partial Differential Equations, Padova (Italy, 1990); Modelli Matematici nelle Scienze Applicate, Pisa (Italy, 1990); 4th International Conference on Domain Decomposition Methods, Moscow (USSR, 1990); 5th International Conference on Domain Decomposition Methods, Norfolk (USA, 1991); The Navier–Stokes Equations II: Theory and Numerical Methods, Oberwolfach (West Germany, 1991); Mathematical Topics in Fluid Mechanics, Lisboa (Portugal, 1991); Modelli Matematici e Numerici in Fluidodinamica e Applicazioni, Pisa (Italy, 1992); Workshop on Qualitative Aspects and Applications of Nonlinear Evolution Equations, Trieste (Italy, 1993); Metz Days 1995-Fluid Flows, Metz (France, 1995); 7th International Congress on Computational and Applied Mathematics, Leuven (Belgium, 1996); International Conference on Applied Analysis, Lisboa (Portugal, 1997); Numerical Modelling in Continuum Mechanics, Praha (Czech Republic, 1997); SIMAI 98, Giardini Naxos (Italy, 1998); Nonlinear Partial Differential Equations and Applications, Lisboa (Portugal, 1999); MAFELAP 1999, Uxbridge (United Kingdom, 1999); ICIAM 1999, Edinburgh (United Kingdom, 1999); Computational Electromagnetics (GAMM Workshop), Kiel (Germany, 2001); Domain Decomposition Methods, Zurich (Switzerland, 2001); Modelling 2001 (2nd IMACS Conference), Pilsen (Czech Republic, 2001); International Workshop on Nonlinear Partial Differential Equations: Theory and Applications, Madeira (Portugal, 2003); 15th International Conference on Domain Decomposition Methods, Berlin (Germany, 2003); Advances in Numerical Algorithms, Graz (Austria, 2003); Computational Electromagnetism, Oberwolfach (Germany, 2004); Computational Methods for Coupled Problems in Science and Engineering, Santorini (Greece, 2005); Second Chilean Workshop on Numerical Analysis of Partial Differential Equations WONAPDE 2007, Concepcion (Chile, 2007); European Seminar on Coupled Problems, Jetrichovice (Czech Republic, 2008); Computational Methods for Coupled Problems in Science and Engineering, Ischia (Italy, 2009); SIAM Conference on Analysis of Partial Differential Equations, Miami (U.S.A., 2009); International Conference on Mathematical Fluid Mechanics and Biomedical Applications, Ponta Delgada (Portugal, 2011); ICCM 2012 - International Conference on Computational Mathematics, Seoul (Korea, 2012); International Winter School Mathematical Fluid Dynamics, Levico (Italy, 2012); IFP TC 7.2 Workshop Electromagnetics – Modelling, Simulation, Control and Industrial Applications, Berlin (Germany, 2013); Equadiff13, Praha (Czech Republic, 2013); Latest Advances in Numerical Solutions with FEM, Puerto Varas (Chile, 2014); 6th International Conference on Computational Methods in Applied Mathematics, St. Wolfgang (Austria, 2014); Fifth Chilean Workshop on Numerical Analysis of Partial Differential Equations WONAPDE 2016, Concepcion (Chile, 2016); Workshop on Analysis and Numerics of Acoustic and Electromagnetic Problems, Linz (Austria, 2016).

iv) Participant and speaker at the Conference: Approximation Methods for Navier–Stokes Problems, Paderborn (West Germany, 1979); Congresso U.M.I., Palermo (Italy, 1979); Nonlinear Partial Differential Equations, Trento (Italy, 1980); Convegno G.N.A.F.A., Rimini (Italy, 1980); Fluid Dynamics, Varenna (Italy, 1982); Nonlinear Functional Analysis and Applications, Berkeley (U.S.A., 1983); Nonlinear Variational

Problems, Lacona (Italy, 1983); BAIL IV, Novosibirsk (U.S.S.R., 1986); Equadiff 7, Praha (Czechoslovakia, 1989); Convegno Gruppo 40% Equazioni differenziali, Trento (Italy, 1990); Equadiff 95, Lisboa (Portugal, 1995); The Third European Finite Element Fair, Pavia (Italy, 2005).

### **Attended conferences**

Participant at the Conference: Hyperbolicity, Cortona (Italy, 1976); Pseudo-differential Operators with Applications, Bressanone (Italy, 1977); Mathematics and Medical Sciences, Montecatini (Italy, 1978); Two-dimensional and Quasi-two-dimensional Turbulence, Grenoble (France, 1978); Convegno G.N.A.F.A., Rimini (Italy, 1978); Bifurcation Phenomena in Mathematical Physics, Cargèse (France, 1979); Mathematical Problems in Continuum Mechanics, Trento (Italy, 1981); Convegno G.N.A.F.A., Rimini (Italy, 1981); Computing Methods in Applied Science and Engineering V, Versailles (France, 1981); Variational Methods for Equilibrium Problems of Fluids, Trento (Italy, 1983); Contact and Optimization Problems in Elasticity, Trento (Italy, 1984); Frontiers of Mathematical Sciences, New York (U.S.A., 1985); Partial Differential Equations, Madison (U.S.A., 1985); Free Boundary Problems, Pavia (Italy, 1986); Calculus of Variations and Partial Differential Equations, Trento (Italy, 1986); Biomathematics and Fluid Dynamics Problems, Pavia (Italy, 1986); Bifurcation Theory and Its Numerical Analysis, Xi'an (P.R.China, 1988); Hermes Meeting 1988, Aachen (West Germany, 1988); Streamline Diffusion Methods in Fluid Mechanics, Cortona (Italy, 1989); ICOSAHOM '89, Como (Italy, 1989); Applied and Industrial Mathematics, Venezia (Italy, 1989); Non-linear Partial Differential Equations, Lancaster (United Kingdom, 1990); Free Boundaries in Viscous Flows, Minneapolis (USA, 1991); 9th Army Conference on Applied Mathematics and Computing, Minneapolis (USA, 1991); Numerical Methods for the Navier–Stokes Equations, Heidelberg (Germany, 1993); Coupling Equations of Different Type and Complexity, Pavia (Italy, 1994); State of the Art in Numerical Analysis, York (United Kingdom, 1996); Mixed Finite Elements, Compatibility Conditions, and Applications, Cetraro (Italy, 2006); High-Order Numerical Approximation for Partial Differential Equations, Bonn (Germany, 2012); Fluid Dynamics and Electromagnetism: Theory and Numerical Approximation, Levico (Italy, 2014).

### **Organization of conferences**

i) Member of the Organizing Committee of the: 6th International Conference on Domain Decomposition Methods, Como (Italy, 1992); 7th International Conference Evolution Equations 2000, Trento (Italy, 2000).

ii) Member of the Scientific Committee of the: School on Numerical Simulation of Partial Differential Equations: Methods, Algorithms, Applications, Trieste (Italy, 1996); Conference “Partial Differential Equations in Mathematical Physics”, in memory of Olga A. Ladyzhenskaya, Levico (Italy, 2004); Conference “Mathematical Physics and PDEs”, Levico (Italy, 2009); Conference “Partial Differential Equations in Mathematical Physics and Their Numerical Approximation”, Levico (Italy, 2011); Conference “ACE'13-8th Workshop on Advanced Computational Electromagnetics”, Trento (Italy, 2013); Conference “Recent Advances in PDEs and Applications”, on occasion of Hugo Beirão da Veiga's 70th birthday, Levico (Italy, 2014); CIME School “Computational Electromagnetism”, Cetraro (Italy, 2014); “Calcolo Scientifico e Modelli Matematici”, Genova (Italy, 2015).

iii) Member of the Advisory Board of Equadiff 10, Praha (Czech Republic, 2001)

### **Other activities**

i) Advisor of the Ph.D. Thesis: R.L. Trotta (University of Trento, February 1997); P. Coletti (University of Trento, February 1998); L.C. Berselli (University of Pisa, February 2000); L. Gerardo Giorda (University of Trento, December 2002); J. Camaño Valenzuela (University of Concepcion, Chile, June 2013).

ii) Member of the Jury of the Ph.D. Thesis: R. Talhouk (University of Paris-Sud, Orsay, France, October 1994); M. Bjorhus (University of Trondheim, Norway, July 1995); P. Azérad (University of Neuchâtel, Switzerland, October 1995); G. Sangalli (University of Milan, January 2002); P. Salgado (University of Santiago de Compostela, Spain, December 2002); M. Sala (Ecole Polytechnique Federale de Lausanne, Switzerland, February 2003); M. Discacciati (Ecole Polytechnique Federale de Lausanne, Switzerland, October 2004); V. Selgas (University of Oviedo, Spain, February 2006); S. Lo Forte (Polytechnic of Milan, May 2007); A. Moura (Polytechnic of Milan, May 2007); M. Restelli (Polytechnic of Milan, May 2007); R. Vázquez Hernández (University of Santiago de Compostela, Spain, December 2008); G. Giorgi (University of Genova, April 2012); P. Venegas Tapia (University of Concepcion, Chile, June 2013); M. Penati (Polytechnic of Milan, April 2014).

iii) Member of the Jury for a First Level Researcher position (Istituto per la Matematica Applicata del C.N.R., Genova, December 2001).

iv) Member of the Jury for a Full Professor position (Instituto Superior Técnico, Lisboa, Portugal, April 2011).

v) Referee for: Acta Applicandae Mathematicae; Advances in Computational Mathematics; Advances in Mathematical Sciences and Applications; Analysis; Annali della Scuola Normale Superiore di Pisa; Annali di Matematica Pura ed Applicata; Applicable Analysis; Applied Numerical Mathematics; Archive for Rational Mechanics and Analysis; Bollettino dell'Unione Matematica Italiana; Comitato di Indirizzo per la Valutazione della Ricerca (CIVR); Communications in Mathematical Physics; Computers and Mathematics with Applications; Computer Methods in Applied Mechanics and Engineering; Czechoslovak Academy of Sciences; Differential and Integral Equations; Dynamic Systems and Applications; Grant Agency of the Czech Republic; IMA Journal of Numerical Analysis; Interfaces and Free Boundaries; International Journal for Numerical Methods in Engineering; International Journal of Partial Differential Equations; International Science Foundation; Inverse Problems in Science & Engineering; Journal of Applied Mathematics; Journal of Computational and Applied Mathematics; Journal of Computational Engineering; Journal of Computational Physics; Journal of Coupled Systems and Multiscale Dynamics (JCSMD); Journal of Elasticity; Journal of Functional Analysis; Journal of Mathematical Analysis and Applications; Journal of Mathematical Fluid Mechanics; Journal of Mathematical Physics; Journal of Scientific Computing; Lecture Notes in Computational Science and Engineering; Lecture Notes in Mathematics; Mathematica Bohemica; Mathematical and Computer Modelling; Mathematical Methods in Applied Sciences; M<sup>2</sup>AN: Mathematical Modelling and Numerical Analysis; M3AS: Mathematical Models and Methods in Applied Sciences; Mathematics and Computer in Simulation; National Academy of Sciences/National Research Council; National Science Foundation; Netherlands Organization for Scientific Research; Nonlinear Analysis Series B: Real World Applications; Nonlinear Differential Equations and Applications; Numerical Algorithms; Numerical Methods for Partial Differential Equations; Numerische Mathematik; Oxford University Press; Programmi di Ricerca di Rilevante Interesse Nazionale (PRIN); Pubblicazioni della Scuola Normale Superiore di Pisa; Rendiconti del Circolo Matematico di Palermo; Rendiconti del Seminario Matematico dell'Università di Padova; Rendiconti del Seminario Matematico dell'Università e del Politecnico di Torino; Rendiconti di Matematica; Ricerche di Matematica; Rivista di Matematica dell'Università di Parma; Serdica Mathematical Journal; SIAM Journal on Applied Mathematics; SIAM Journal on Control and Optimization; SIAM Journal on Mathematical Analysis; SIAM Journal on Numerical Analysis; SIAM Journal on Scientific Computing; Springer-Verlag; The Croucher Foundation; University of Cyprus; ZAMP (Zeitschrift für angewandte Mathematik und Physik).

vi) Reviewer for "Mathematical Reviews" since 1979.

## Publications

### i) Books

Alonso Rodríguez A., Valli A., “Eddy Current Approximation of Maxwell Equations”, Milan: Springer-Verlag Italia, 2010, p. XIV+347.

Quarteroni A., Valli A., “Domain Decomposition Methods for Partial Differential Equations”, Oxford: Oxford University Press, 1999, p. XVI+360.

Quarteroni A., Valli A., “Numerical Approximation of Partial Differential Equations”, Berlin: Springer-Verlag, 1994, p. XVI+543.

### ii) Parts of a book

Alonso Rodríguez A., Meddahi S., Valli A., “Coupling DG-FEM and BEM for a time harmonic eddy current problem”. In “Spectral and High Order Methods for Partial Differential Equations ICOSAHOM 2016”, Bittencourt M.L., Dumont N.A., Hesthaven J.S., eds., Cham: Springer, 2017, p. 147–160. Lecture notes in computational science and engineering 119.

Tröltzsch F., Valli A., “Modeling and control of low-frequency electromagnetic fields in multiply connected conductors”, In: “System Modeling and Optimization”, Bociu L., Désidéri J.-A., Habbal A., eds., Cham: Springer, 2016, p. 505–516. IFIP Advances in Information and Communication Technology 494.

Alonso Rodríguez A., Fernandes P., Valli A., “The time-harmonic eddy-current problem in general domains: solvability via scalar potentials”. In: “Computational Electromagnetics”, Carstensen C., Funken S., Hackbusch W., Hoppe R.H.W., Monk P., eds., Berlin: Springer-Verlag, 2003, p. 143–163. Lecture notes in computational science and engineering 28.

Alonso Rodríguez A., Valli A., “Domain decomposition methods for time-harmonic Maxwell equations: numerical results”. In: “Recent Developments in Domain Decomposition Methods”, Pavarino L., Toselli A., eds., Berlin: Springer-Verlag, 2002, p. 157–171. Lecture notes in computational science and engineering 23.

Quarteroni A., Valli A., “Domain decomposition methods for compressible flows”. In: “Error Control and Adaptivity in Scientific Computing”, Bulgak H., Zenger C., eds., Dordrecht Boston New York: Kluwer academic, 1999, p. 221–245.

Quarteroni A., Valli A., “Domain decomposition methods for partial differential equations”. In: “27th Computational Fluid Dynamics”, Deconinck H., ed., Rhode-Saint-Genèse: Von Karman institute for fluid dynamics, 1996, p. 1–90. von Karman lecture series 6.

Carlenzoli C., Quarteroni A., Valli A., “Numerical solution of the Navier–Stokes equations for viscous compressible flows”. In: “Applied Mathematics in Aerospace Science and Engineering”, Miele A., Salvetti A., eds., New York: Plenum, 1994, p. 81–111. Mathematical concepts and methods in science and engineering 44.

Quarteroni A., Valli A., “Mathematical modelling and numerical approximation of fluid flow”. In: “Methods and Techniques in Computational Chemistry: METECC-94. Volume C: Structure and Dynamics”, Clementi E., ed., Cagliari: STEF, 1993, p. 247–298.

Valli A., “Mathematical results for compressible flows”. In: “Mathematical Topics in Fluid Mechanics”, Rodrigues J.F., Sequeira A., eds., Harlow: Longman scientific & technical, 1992, p. 193–229. Pitman research notes in mathematics series 274.

Carlenzoli C., Quarteroni A., Valli A., “Spectral domain decomposition methods for compressible Navier–Stokes equations”. In: “5th International Symposium on Domain Decomposition Methods for Partial Differential Equations”, Keyes D.E., Chan T.F., Meurant G., Scroggs J.S., Voigt R.G., eds., Philadelphia: SIAM, 1992, p. 441–450.

Quarteroni A., Pasquarelli F., Valli A., “Heterogeneous domain decomposition: principles, algorithms, applications”. In: “5th International Symposium on Domain Decomposition Methods for Partial Differential Equations”, Keyes D.E., Chan T.F., Meurant G., Scroggs J.S., Voigt R.G., eds., Philadelphia: SIAM, 1992, p. 129–150.

Quarteroni A., Valli A., “Theory and applications of Steklov–Poincaré operators for boundary value problems”. In: “Applied and Industrial Mathematics”, Spigler R., ed., Dordrecht Boston New York: Kluwer academic, 1991, p. 179–203. Mathematics and its applications 56.

Quarteroni A., Valli A., “Theory and applications of Steklov–Poincaré operators for boundary value problems: the heterogeneous operator case”. In: “4th International Symposium on Domain Decomposition

Methods for Partial Differential Equations”, Glowinski R., Kuznetsov Y.A., Meurant G., Periaux J., Widlund O.B., eds., Philadelphia: SIAM, 1991, p. 58–81.

Quarteroni A., Valli A., “Domain decomposition for a generalized Stokes problem”. In: “3rd European Conference on Mathematics in Industry”, Manley J., McKee S., Owens D., eds., Stuttgart: Teubner, 1990, p. 59–74. European consortium for mathematics in industry 5.

iii) Papers

Alonso Rodríguez A., Camaño J., Rodríguez R., Valli A., Venegas P., “Finite element approximation of the spectrum of the curl operator in a multiply connected domain”, *Found. Comput. Math.*, 2018, v., p..

Tröltzsch F., Valli A., “Optimal voltage control of non-stationary eddy current problems”, *Math. Control Relat. Fields*, 2018, v. 8, p. 35–56.

Alonso Rodríguez A., Camaño J., Ghiloni R., Valli A., “Graphs, spanning trees and divergence-free finite elements in domains of general topology”, *IMA J. Numer. Anal.*, 2017, v. 37, p. 1986–2003.

Tröltzsch F., Valli A., “Optimal control of low-frequency electromagnetic fields in multiply connected conductors”, *Optimization*, 2016, v. 65, p. 1651–1673.

Alonso Rodríguez A., Camaño J., Rodríguez R., Valli A., “Assessment of two approximation methods for the inverse problem of electroencephalography”, *Int. J. Numer. Anal. Model.*, 2016, v. 13, p. 587–609.

Marzadri A., Tonina D., Bellin A., Valli A., “Mixing interfaces, fluxes, residence times and redox conditions of the hyporheic zones induced by dune-like bedforms and ambient groundwater flow”, *Adv. Water Res.*, 2016, v. 88, p. 139–151.

Alonso Rodríguez A., Valli A., “Finite element potentials”, *Appl. Numer. Math.*, 2015, v. 95, p. 2–14.

Alonso Rodríguez A., Bertolazzi E., Ghiloni R., Valli A., “Finite element simulation of eddy current problems using magnetic scalar potentials”, *J. Comput. Phys.*, 2015, v. 294, p. 503–523.

Alonso Rodríguez A., Camaño J., Rodríguez R., Valli A., “A posteriori error estimates for the problem of electrostatics with a dipole source”, *Comput. Math. Appl.*, 2014, v. 68, n. 4, p. 464–485.

Alonso Rodríguez A., Bertolazzi E., Ghiloni R., Valli A., “Construction of a finite element basis of the first de Rham cohomology group and numerical solution of 3D magnetostatic problems”, *SIAM Journal on Numerical Analysis*, 2013, v. 51, n. 4, p. 2380–2402.

Valli A., “Solving an electrostatics-like problem with a current dipole source by means of the duality method”, *Applied Mathematics Letters*, 2012, v. 25, n. 10, p. 1410–1414.

Alonso Rodríguez A., Camaño J., Valli A., “Inverse source problems for eddy current equations”, *Inverse Problems*, 2012, v. 28, 015006 (15pp).

Alonso Rodríguez A., Valli A., Vázquez Hernández R., “A formulation of the eddy-current problem in the presence of electric ports. *Numerische Mathematik*, 2009, v. 113, n. 4, p. 643–672.

Alonso Rodríguez A., Valli A., “A FEM–BEM approach for electromagnetostatics and time-harmonic eddy-current problems. *Applied Numerical Mathematics*, 2009, v. 59, n. 9, p. 2036–2049.

Alonso Rodríguez A., Valli A., “Voltage and current excitation for time-harmonic eddy-current problems”. *SIAM Journal on Applied Mathematics*, 2008, v. 68, n. 5, p. 1477–1494.

Fernandes P., Valli A., “Lorenz gauged vector potential formulations for the time-harmonic eddy-current problem with  $L^\infty$ -regularity of material properties”. *Mathematical Methods in the Applied Sciences*, 2008, v. 31, n. 1, p. 71–98.

Discacciati M., Quarteroni A., Valli A., “Robin–Robin domain decomposition methods for the Stokes–Darcy coupling”. *SIAM Journal on Numerical Analysis*, 2007, v. 45, n. 3, p. 1246–1268.

Bíró O., Valli A., “The Coulomb gauged vector potential formulation for the eddy-current problem in general geometry: well-posedness and numerical approximation”. *Computer methods in applied mechanics and engineering*, 2007, v. 196, n. 13–16, p. 1890–1904.

Quarteroni A., Sala M., Valli A., “An interface-strip domain decomposition preconditioner”. *SIAM Journal on Scientific Computing*, 2006, v. 28, n. 2, p. 498–516.

Alonso Rodríguez A., Hiptmair R., Valli A., “A hybrid formulation of eddy current problems”. *Numerical methods for partial differential equations*, 2005, v. 21, n. 4, p. 742–763.

Alonso Rodríguez A., Hiptmair R., Valli A., “Mixed finite element approximation of eddy current problems”. *IMA journal of numerical analysis*, 2004, v. 24, p. 255–271.

Alonso Rodríguez A., Fernandes P., Valli A., “Weak and strong formulations for the time-harmonic eddy-current problem in general multi-connected domains”. *European journal of applied mathematics*, 2003, v.

14, n. 4, p. 387–406.

Alonso Rodríguez A., Valli A., “Domain decomposition algorithms for time-harmonic Maxwell equations with damping”. *ESAIM: Mathematical Modelling and Numerical Analysis = Modélisation Mathématique et Analyse Numérique*, 2001, v. 35, n. 4, p. 825–848.

Alonso Rodríguez A., Valli A., “An optimal domain decomposition preconditioner for low-frequency time-harmonic Maxwell equations”. *Mathematics of Computation*, 1999, v. 68, n. 226, p. 607–631.

Alonso Rodríguez A., Valli A., “Unique solvability for high-frequency heterogeneous time-harmonic Maxwell equations via Fredholm alternative theory”. *Mathematical Methods in the Applied Sciences*, 1998, v. 21, n. 6, p. 463–477.

Alonso Rodríguez A., Trotta R.L., Valli A., “Coercive domain decomposition algorithms for advection–diffusion equations and systems”. *Journal of computational and applied mathematics*, 1998, v. 96, n. 1, p. 51–76.

Alonso Rodríguez A., Valli A., “A domain decomposition approach for heterogeneous time-harmonic Maxwell equations”. *Computer methods in applied mechanics and engineering*, 1997, v. 143, p. 97–112.

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