

Francesco P. Andriulli

Full Professor
Ordinario di Campi Elettromagnetici
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Research and Teaching interests

Computational and Applied Electromagnetics. Well-conditioned formulations and fast solvers. Modelling and design techniques for metamaterials and metasurfaces, wireless components, and microwave circuits. Computational strategies for high-resolution electroencephalographies.

Education

- **Doctor of Philosophy**, University of Michigan, Ann Arbor, Michigan 2005-2008
- **M.Sc. in Electrical Engineering and Computer Science**, University of Illinois, Chicago, Illinois, 2002-2004
- **Laurea in Electrical Engineering**, Politecnico di Torino, Turin, Italy 1999-2004

Key facts

- **Recipient of an ERC grant of the European Union “321: From Cubic³ To² Linear¹ Complexity in Computational Electromagnetics”.** (ERC Consolidator Grant 2016, two million euros).
- **50 papers** published or in print on international ISI journals, 4 papers under review, and **90 papers** in peer-reviewed conference proceedings, **23 invited contributions**.
- **More than 15 Awards and distinctions** for scientific publications.
- Recipient of the **2015 EurAAP Leopold B. Felsen Award for Excellence in Electrodynamics**
- Recipient of the **URSI Issac Koga Gold Medal** (triennium 2014-2016).
- Recipient of the **IEEE AP-S Donald G. Dudley Undergraduate Teaching Award**.
- **Editor-in-Chief** of IEEE APM, **Track Editor** of IEEE TAP, **Associate Editor** of **other 4 journals** (2 from the IEEE: IEEE AWPL and IEEE Access), reviewer for 19 ISI journals.
- **Advisor of 5 PhD students and 3 Post-Docs**. Past advisor of 8 graduated PhD students (3 currently faculty members).
- **Current and past Principal investigator** for **8** national and international research projects (More than **4.3 million euros** of personal budget in the last four years).

Research Positions

Full Professor Department of Electronics and Telecommunications Politecnico di Torino Turin, Italy	2017- present
Full Professor IMT Atlantique Institut Mines-Telecom Brest, France	2014-2017
Associate Professor IMT Atlantique Institut Mines-Telecom Brest, France	2010-2014
Research Associate and Adjunct Professor Department of Electrical Engineering Politecnico di Torino Turin, Italy	2008-2010
Research Assistant The Radiation Laboratory Department of Electrical Engineering and Computer Science University of Michigan at Ann Arbor Ann Arbor, Michigan	2005-2008

Honors and Awards

- EurAAP Leopold B. Felsen Award for Excellence in Electrodynamics. 2015
- ICEAA IEEE-APWC Best Paper Award 2015
- URSI Issac Koga Gold Medal (triennium 2014-2016) 2014
"For contributions to computational electromagnetics, specifically the development of preconditioned and stable integral equation solvers".
- IEEE AP-S Donald G. Dudley Jr. Undergraduate Teaching Award 2014
"For the excellence in advising undergraduate research and in the development of research inspired courses in applied and computational electromagnetics".
- Young Scientist Award and second prize in the Best Young Scientist Paper Contest URSI International Symposium on Electromagnetic Theory, Hiroshima. 2013
- URSI Young Scientist Award, International Symposium on Electromagnetic Theory (EMTS 2010), Berlin. 2010
- IEEE Antennas and Propagation Society Raj Mittra Travel Grant. 2009

- Best Student Paper Award at the IEEE Antennas and Propagation Society International Symposium, San Diego (authored 2 out of 15 finalist papers). 2008
- Best Student Paper Award at the URSI North American Radio Science Meeting, Ottawa. 2007
- Membership in the honor societies of Eta Kappa Nu, Tau Beta Pi, and Phi Kappa Phi
- In addition FPA co-authored with his students and collaborators other three first prize conference papers (EMTS 2016, URSI-DE Meeting 2014, ICEAA 2009), a second prize conference paper (URSI GASS 2014), a third prize conference paper (URSI/IEEE-APS 2018, three honorable mention conference papers (ICEAA 2011, URSI/IEEE-APS 2013, URSI/IEEE-APS 2020) and other three finalist conference papers (URSI/IEEE-APS 2012, URSI/IEEE-APS 2007, URSI/IEEE-APS 2006).

International Short Courses

Advanced Computational EM for Antenna Analysis. Organizer and co-coordinator of this week-long international course which is part of the European School of Antennas. (held in Paris 2014, Paris 2016, Turin 2018).

Fast Solvers for Electromagnetic Integral Equations. Taught as a part of a course of the European School of Antennas at EPFL (October 2010) and at the Politecnico di Torino (October 2012).

Advanced preconditioning techniques for computational electromagnetics. Taught during the URSI/IEEE Antennas and Propagation Society International Symposium in Spokane (2011), Chicago (2012), Orlando (2013), Memphis (2014), Vancouver (2015), and Puerto Rico (2016).

Professional Services and Affiliations

Administrative Committee Member, IEEE Antennas and Propagation Society

Editor-in-Chief, IEEE Antennas and Propagation Magazine
 Track Editor, IEEE Transactions on Antennas and Propagation
 Associate Editor, IEEE Antennas and Wireless Propagation Letters
 Associate Editor, IEEE Access
 Associate Editor, IET Microwaves, Antennas & Propagation
 Associate Editor, URSI Radio Science Letters

Reviewer for the IEEE Transactions on Antennas and Propagation
 Reviewer for the IEEE Transactions on Microwave Theory and Techniques
 Reviewer for the IEEE Transactions on Electromagnetic Compatibility
 Reviewer for the IEEE Antennas and Wireless Propagation Letters
 Reviewer for the IEEE Microwave and Wireless Components Letters
 Reviewer for IEEE Access
 Reviewer for the Journal of Computational Physics
 Reviewer for the Journal of Electromagnetic Waves and Applications
 Reviewer for Radio Science
 Reviewer for IET Microwave, Antennas and Propagation
 Reviewer for the International Journal of Electronics (Taylor and Francis)

Reviewer for the International Journal of Electronics and Communications
Reviewer for the Journal of Circuits, Systems, and Computers
Reviewer for the International Journal of Numerical Modelling
Reviewer for Engineering Analysis with Boundary Elements
Reviewer for the SIAM Journal of Numerical Analysis
Reviewer for Applied Mathematics and Computation
Reviewer for Applied Mathematical Modelling
Reviewer for the Journal of Mathematical Analysis and Applications
Reviewer for the Journal of Computational and Applied Mathematics
Reviewer for Journal of Neural Engineering

Senior member of the IEEE
Member of the European Association on Antennas and Propagation (EurAAP)
Member of the IEEE Antennas and Propagation Society
Member of the IEEE Microwave Theory and Techniques Society
Member of the IEEE Engineering in Medicine and Biology Society
Member of the IEEE Education Society

Member of the International Board of the European School of Antennas

TPC memberships, organization of convened sessions, and (selected) invited contributions at international conferences and symposia

Keynote Speaker 2019 IEEE International Conference on Antennas Measurements and Applications (IEEE CAMA 2019). Bali, Indonesia, October 2019.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2019. Atlanta, USA, July 2019.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2018. Boston, USA, July 2018.

Invited speaker, Workshop on Numerical methods for wave propagation and applications, Université Pierre et Marie Curie, Paris, 2017.

Invited speaker, International Workshop on Electromagnetic Theory, Modeling, and Simulations. Chengdu, 2017.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2017. San Diego, USA, July 2017.

Scientific Committee Member International Conference on Electromagnetics in Advanced Applications ICEAA-IEEE APWC 2017. Verona, Italy.

Technical Program Committee Member Journées Scientifiques d'URSI-France, February 2017.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2016. Puerto Rico, USA, June 2016.

Invited speaker, Workshop on New Trends in Integral Equations. Ecole Polytechnique, Paris, 2016.

Invited speaker, International Workshop on Electromagnetic Theory, Modeling, and Simulations. Chengdu, 2015.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2015. Vancouver, Canada, July 2015.

Technical Program Committee Member 2015 IEEE International Conference on Computational Electromagnetics.

Technical Program Committee Member Conférence Européenne sur les Méthodes Numériques en Electromagnétisme (NUMELEC 2015).

Technical Program Committee Member Journées Scientifiques d'URSI-France, July 2014.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2014. Memphis, Tennessee, July 2014.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2013, Florida, July 2013.

Technical Program Committee Member IEEE International Symposium on Antennas and Propagation 2012. Chicago, Illinois, July 2012.

Convened Session Organizer, URSI General Assembly. Beijing, August 2014, Session: Electromagnetic Uncertainty Quantification.

Convened Session Organizer, Applied Computational Electromagnetics Society International Symposium ACES 2013, Session: Fast Integral Equation Methods and Stable Discretizations.

Convened Session Organizer, Applied Computational Electromagnetics Society International Symposium ACES 2012, Session: Advanced Integral Equation Methods.

Convened Session Organizer, European Conference on Antennas and Propagation (EUCAP) 2011, Session: Numerical Methods for Multi-Scale Problems.

Invited talk, Mathematisches Forschungsinstitut Oberwolfach 2013 meeting on Computational Electromagnetism and Acoustics.

Invited paper, F. P. Andriulli, K. Cools, I. Bogaert. Stable Solutions of EM Integral Equation in the Entire Frequency Spectrum Without the Search for Global Loops. International Conference on Advanced Computational Methods in Engineering.

Invited paper, F. P. Andriulli. Analysis and Efficient Algorithms for a Set of Generalized RWG Basis Functions, EUCAP 2014, De Haag.

Invited paper, F P. Andriulli On the Use of Graph Laplacians in the Integral Equation Modeling of Complex and Multiscale Problems). IEEE APS 2014, Memphis.

Invited paper, F. P. Andriulli, K. Cools, I. Bogaert, and E. Michielssen. A Magnetic Type Integral Operator which is Stable till Extremely Low Frequency, URSI GASS 2014, Beijing.

Invited talk, F. P. Andriulli. Preconditioned and stable integral formulations. Workshop on Computational Electromagnetics, URSI GASS 2014, Beijing.

Invited paper, F. P. Andriulli. Hierarchical EM Preconditioners with Spectral Domain Partitioning. Proceedings of the 6th European Conference on Antennas and Propagation (EuCAP), 2012.

Invited paper, F. P. Andriulli, “Spectral Properties and Regularization of Loop, Star, and Tree Related Gram Matrices” . *International Review of Progress in Applied Computational Electromagnetics (ACES 2010)*, Tampere Finland, April 2010.

Invited paper, F. P. Andriulli, G. Vecchi, “Helmholtz-stable fast solution of the Combined Field Integral Equation.” . *European Conference on Antennas and Propagation (EuCAP)*, Barcelona, Spain, April 2010.

Invited paper, F. P. Andriulli, “Analysis and Stable Inversions of Standard Quasi-Helmholtz Decompositions”. International Symposium on Electromagnetic Theory (EMTS2010), Berlin, Germany, August 2010.

Invited paper, F. P. Andriulli, G. Vecchi, “On the Regularization of the Vector Potential in the Electric Field Integral Equation.” . *European Conference on Antennas and Propagation (EuCAP)*, Rome, Italy, April 2011.

Invited talk, F. P. Andriulli “Perspectives and Open Problems in Preconditioning EM Integral Equations.”. invited in the session “Ten Open Problems in Computational Electromagnetics” *IEEE Antennas and Propagat. Int. Symp.*, Spokane, USA, July 2011.

Publications

The publication record includes **52 papers published** on international peer-reviewed ISI journals, 3 journal papers under review, and **80 papers in conference proceedings** (of which **23 invited contributions**).

Google Scholar: total citations >**1900**, h-index: **20**, g-index: **40**

<http://scholar.google.com/citations?user=w-SFwyMAAAAJ&hl=it>

Journal papers

- [R1]. Dély, Alexandre, Francesco P. Andriulli, and Kristof Cools. "Large Time Step and DC Stable TD-EFIE Discretized with Implicit Runge-Kutta Methods." *IEEE Transactions on Antennas and Propagation* (2019).
- [R2]. Merlini, A., Beghein, Y., Cools, K., Michielssen, E., & Andriulli, F. P. (2019). Magnetic and Combined Field Integral Equations Based on the Quasi-Helmholtz Projectors. *IEEE Transactions on Antennas and Propagation* (2019).
- [R3]. Adrian, Simon B., Francesco P. Andriulli, and Thomas F. Eibert. "On a refinement-free Calderón multiplicative preconditioner for the electric field integral equation." *Journal of Computational Physics* 376 (2019): 1232-1252.
- [R4]. Pillain, Axelle, Lyes Rahmouni, and Francesco P. Andriulli. "Handling anisotropic conductivities in the EEG forward problem with a symmetric formulation." *Physics in medicine and biology* (2018).
- [R5]. Pillain, Axelle, Lyes Rahmouni, and Francesco P. Andriulli. "A Calderon regularized symmetric formulation for the electroencephalography forward problem." *Journal of Computational Physics* 375 (2018): 291-306.
- [R6]. Lindgren, J. T., Merlini, A., Lécuyer, A., & Andriulli, F. P. (2018). simBCI—A Framework for Studying BCI Methods by Simulated EEG. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 26(11), 2096-2105.
- [R7]. Rahmouni, L., Adrian, S. B., Cools, K., & Andriulli, F. P. (2018). Conforming discretizations of boundary element solutions to the electroencephalography forward problem. *Comptes Rendus Physique*, 19(1-2), 7-25.
- [R8]. Gaffoglio, R., Cagliero, A., Vecchi, G., & Andriulli, F. P. (2018). Vortex waves and channel capacity: Hopes and reality. *IEEE Access*, 6, 19814-19822.
- [R9]. Y. Beghein, R. Mitharwal, K. Cools, and F. P. Andriulli On a low-frequency and refinement stable PMCHWT integral equation leveraging the quasi-Helmholtz projectors *IEEE Transactions on Antennas and Propagation* , Vol. 65, n.10, 2017, pp. 5365-5375.
- [R10]. L. Rahmouni, R. Mitharwal, and F. P. Andriulli Two Volume Integral Equations for the Inhomogeneous and Anisotropic Forward Problem in Electroencephalography *Journal of Computational Physics* , Vol. 348, 2017, pp. 732-743.

- [R11]. A. Dely, F. P. Andriulli, and K. Cools An Impedance Boundary Condition EFIE that is Low-Frequency and Refinement Stable IEEE Transactions on Antennas and Propagation , Vol. 65, n.3, 2017, pp. 1259-1266.
- [R12]. H. A. Ulku; I. Bogaert; K. Cools; F. P. Andriulli and H. Bagci Mixed Discretization of the Time Domain MFIE at Low Frequencies. IEEE Antennas and Wireless Propagation Letters , Vol. 16, 2017, pp. 1565-1568.
- [R13]. E. Libessart, M. Arzel, C. Lahuec and F. P. Andriulli A Scaling-Less Newton-Raphson Pipelined Implementation for a Fixed-Point Reciprocal Operator. IEEE Signal Processing Letters , Vol. 24, n.6, 2017, pp. 789-793.
- [R14]. S. B. Adrian, F. P. Andriulli, and T. F. Eibert A Hierarchical Preconditioner for the Electric Field Integral Equation on Unstructured Meshes Based on Primal and Dual Haar Bases. Journal of Computational Physics , Vol. 330, n.1, 2017, pp. 365-379. (Published online in 2016).
- [R15]. A. A. Ijeh, M. M. Ney, and F. P. Andriulli Stability and Dispersion Analysis of a TLM Unified Approach for Dispersive Anisotropic Media. IEEE Transactions on Microwave Theory and Techniques , Vol. 65, n.4, 2017, pp. 1141-1149. (Published online in 2016).
- [R16]. J. E. O. Guzman, S. B. Adrian, R. Mitharwal, Y. Beghein, T. Eibert, K. Cools, and F. P. Andriulli On the Hierarchical Preconditioning of the PMCHWT Integral Equation on Simply and Multiply Connected Geometries. IEEE Antennas and Wireless Propagation Letters , Vol. 16, 2017, pp. 1044-1047. (Published online in 2016).
- [R17]. S. B. Adrian, F. P. Andriulli, and T. F. Eibert On the Hierarchical Preconditioning of the Combined Field Integral Equation. IEEE Antennas and Wireless Propagation Letters , Vol. 15, 2016, pp. 1897-1900.
- [R18]. R. Mitharwal and F. P. Andriulli A Regularized Boundary Element Formulation for Contactless SAR Evaluations within Homogeneous and Inhomogeneous Head Phantoms (**invited**) Comptes Rendus Physique, Vol. 16, n. 9, 2015, pp. 776-788.
- [R19]. Y. Beghein, K. Cools, and F. P. Andriulli A DC-stable, Well Balanced, Calderon Preconditioned Time Domain Electric Field Integral Equation IEEE Transactions on Antennas and Propagation , Vol. 63, n.12, 2015, pp. 5650-5660.
- [R20]. Y. Beghein, K. Cools, and F. P. Andriulli A DC Stable and Large-Time Step Well-Balanced TD-EFIE Based on Quasi-Helmholtz Projectors. IEEE Transactions on Antennas and Propagation , Vol. 63, n.7, 2015, pp. 3087-3097.
- [R21]. R. Mitharwal and F. P. Andriulli. On the Multiplicative Regularization of Graph Laplacians on Closed and Open Structures with Applications to Spectral Partitioning IEEE Access , Vol. 62, 2014, pp. 788-796.
- [R22]. S. B. Adrian, F. P. Andriulli, and T. F. Eibert Hierarchical Bases Preconditioners for the Electric Field Integral Equation on Multiply Connected Geometries. IEEE Transactions on Antennas and Propagation, Accepted for publication.
- [R23]. I. Bogaert and F. P. Andriulli. Maximally Orthogonal High-Order Basis Functions have a Well-Conditioned Gram Matrix. IEEE Transactions on Antennas and Propagation , Vol. 62, n.8, 2014, pp. 4096-4104.
- [R24]. I. Bogaert, K. Cools, F. P. Andriulli, and H. Bagci Low-Frequency Scaling of the

- Standard and Mixed Magnetic Field and Muller Integral Equations. IEEE Transactions on Antennas and Propagation , Vol. 62, n.2, 2014, pp. 822-831.
- [R25]. F. P. Andriulli, K. Cools, I. Bogaert, and E. Michielssen. On a Well-Conditioned Electric Field Integral Operator for Multiply Connected Geometries. IEEE Transactions on Antennas and Propagation , Vol. 61, n.4, 2013, pp. 2077-2087.
- [R26]. F. Valdes, M. Ghaffari-Miab, F. P. Andriulli, K. Cools, and E. Michielssen. High-Order Calderón Preconditioned Time Domain Integral Equation Solvers. IEEE Transactions on Antennas and Propagation , Vol. 61, n.5, 2013, pp. 2570-2588.
- [R27]. F. Valdes, F. P. Andriulli, H. Bagci, and E. Michielssen. Time Domain Single Source Integral Equations for Analyzing Scattering from Homogeneous Penetrable Objects. IEEE Transactions on Antennas and Propagation , Vol. 61, n.3, 2013, pp. 1239-1254.
- [R28]. F. P. Andriulli. Loop-Star and Loop-Tree Decompositions: Analysis and Efficient Algorithms . IEEE Transactions on Antennas and Propagation , Vol. 60, n.5, 2012, pp. 2347-2356.
- [R29]. F. P. Andriulli, and G. Vecchi. A Helmholtz-Stable Fast Solution of the Electric Field Integral Equation . IEEE Transactions on Antennas and Propagation , Vol. 60, n.5, 2012, pp. 2357-2366.
- [R30]. P. Yla-Oijala, S. P. Kiminki, K. Cools, F. P. Andriulli, and S. Jarvenpaa. Mixed Discretization Schemes for Electromagnetic Surface Integral Equations . International Journal of Numerical Modelling: Electronic Networks, Devices and Fields , Vol. 25, n.5, 2012, pp. 525-540.
- [R31]. P. Yla-Oijala, S. P. Kiminki, K. Cools, F. P. Andriulli, and S. Jarvenpaa. Stable Discretization of Combined Source Integral Equation for Scattering by Dielectric Objects . IEEE Transactions on Antennas and Propagation , Vol. 60, n.5, 2012, pp. 2575-2578.
- [R32]. Y. Beghein, K. Cools, F. P. Andriulli, D. De Zutter, and E. Michielssen. A Calderon Multiplicative Preconditioner for the PMCHWT Equation for Scattering by Chiral Objects. IEEE transactions on antennas and propagation, Vol. 60, n.9, 2012, pp. 4239-4248.
- [R33]. K. Cools, F. P. Andriulli, and E. Michielssen. A Calderon Multiplicative Preconditioner for the PMCHWT Integral Equation . IEEE Transactions on Antennas and Propagation , Vol. 59, n.12, 2011, pp. 4579-4587.
- [R34]. F. Valdes, F. P. Andriulli, H. Bagci, and E. Michielssen. A Calderon-Preconditioned Single Source Combined Field Integral Equation for Analyzing Scattering from Homogeneous Penetrable Objects . IEEE Transactions on Antennas and Propagation , Vol. 59, n.6, 2011, pp. 2315-2328.
- [R35]. F. Valdes, F. P. Andriulli, K. Cools, and E. Michielssen. High-Order Div- and Quasi Curl-Conforming Basis Functions for Calderon Multiplicative Preconditioning of the EFIE . IEEE Transactions on Antennas and Propagation , Vol. 59, n.4, 2011, pp. 1321-1337.
- [R36]. K. Cools, F. P. Andriulli, D. De Zutter, and E. Michielssen. Accurate and Conforming Mixed Discretization of the MFIE . IEEE Antennas and Wireless Propagation Letters , Vol. 10, 2011, pp. 528-531.

- [R37]. R. Graglia, A. Peterson, and F. P. Andriulli. Curl-conforming hierarchical vector bases for triangles and tetrahedra . IEEE Transactions on Antennas and Propagation , Vol. 59, n.3, 2011, pp. 950-959.
- [R38]. H. Bagci, F. P. Andriulli, K. Cools, F. Olyslager, and E. Michielssen. A Calderon Multiplicative Preconditioner for Coupled Surface-Volume Electric Field Integral Equations . IEEE Transactions on Antennas and Propagation , Vol. 58, n.8, 2010, pp. 2680-2690.
- [R39]. F. P. Andriulli, A. Tabacco, and G. Vecchi. Solving the EFIE at Low-Frequencies with a Conditioning that Grows only Logarithmically with the Number of Unknowns. IEEE Transactions on Antennas and Propagation , Vol. 58, n.5, 2010, pp. 1614-1624.
- [R40]. H. Bagci, F. P. Andriulli, F. Vipiana, G. Vecchi, and E. Michielssen. A Well-Conditioned Integral-Equation Formulation For Transient Analysis of Low-Frequency Microelectronic Devices. IEEE Transactions on Advanced Packaging , Vol. 33, n.2, 2010, pp. 468-480.
- [R41]. F. P. Andriulli, H. Bagci, F. Vipiana, G. Vecchi, and E. Michielssen. Analysis and Regularization of the TD-EFIE Low Frequency Breakdown. IEEE Transactions on Antennas and Propagation , Vol. 57, n.7, 2009, pp. 2034-2046.
- [R42]. F. Vipiana, F. P. Andriulli, and G. Vecchi. Two-tier Non-simplex Grid Hierarchic Basis for General 3D Meshes. Waves in Random and Complex Media, Vol. 19, n.1, 2009, pp. 126-146.
- [R43]. H. Bagci, F. P. Andriulli, K. Cools, F. Olyslager, and E. Michielssen. A Calderon Multiplicative Preconditioner for the Combined Field Integral Equation. IEEE Transactions on Antennas and Propagation , Vol. 57, n.10, 2009, pp. 3387-3392.
- [R44]. K. Cools, F. P. Andriulli, F. Olyslager, and E. Michielssen. Nullspaces of MFIE and Calderon Preconditioned EFIE Operators Applied to Toroidal Surfaces. IEEE Transactions on Antennas and Propagation , Vol. 57, n.10, 2009, pp. 3205-3215.
- [R45]. F. P. Andriulli, K. Cools, F. Olyslager, and E. Michielssen. Time-Domain Calderon Identities and their Application to the Integral Equation Analysis of Scattering by PEC Objects, Part II: Stability. IEEE Transactions on Antennas and Propagation , Vol. 57, n.8, 2009, pp. 2365-2375.
- [R46]. K. Cools, F. P. Andriulli, F. Olyslager, and E. Michielssen. Time-Domain Calderon Identities and their Application to the Integral Equation Analysis of Scattering by PEC Objects, Part I: Preconditioning. IEEE Transactions on Antennas and Propagation , Vol. 57, n.8, 2009, pp. 2352-2364.
- [R47]. F. P. Andriulli, K. Cools, H. Bagci, F. Olyslager, A. Buffa, S. Christiansen, and E. Michielssen. A Multiplicative Calderon Preconditioner for the Electric Field Integral Equation. IEEE Transactions on Antennas and Propagation , Vol. 56, n.8, 2008, pp. 2398-2412.
- [R48]. F. P. Andriulli, F. Vipiana, and G. Vecchi. Hierarchical Bases for Non Hierarchic 3D Triangular Meshes. IEEE Transactions on Antennas and Propagation , Vol. 56, n.8, 2008, pp. 2288-2297.
- [R49]. F. P. Andriulli, A. Tabacco, and G. Vecchi. A Multiresolution Approach to the Electric

- Field Integral Equation in Antenna Problems. *SIAM Journal on Scientific Computing* , Vol. 29, n.1, 2007, pp. 1-21.
- [R50]. F. P. Andriulli, and E. Michielssen. A Regularized Combined Field Integral Equation for Scattering from 2D Perfectly Electric Conducting Objects. *IEEE Transactions on Antennas and Propagation* , Vol. 55, n.9, 2007, pp. 2522-2529.
- [R51]. F. P. Andriulli, H. Bagci, F. Vipiana, G. Vecchi, and E. Michielssen. A Marching-On-in-Time Hierarchical Scheme for the Solution of the Time Domain Electric Field Integral Equation. *IEEE Transactions on Antennas and Propagation* , Vol. 55, n.12, 2007, pp.3734-3738.
- [R52]. F. P. Andriulli, G. Vecchi, F. Vipiana, P. Pirinoli, and A. Tabacco. Optimal A-Priori Clipping Estimation for Wavelet Based Method of Moment Matrices. *IEEE Transactions on Antennas and Propagation* , Vol. 53, n.11, 2005, pp.3726-3734.

Conference Papers

- [R1]. M. Y. Monin, L. Rahmouni and F. P. Andriulli, "A Hybrid Integral Equation Approach to Solve the Anisotropic Forward Problem in Electroencephalography," *2018 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting*, Boston, MA, 2018, pp. 2395-2396.
- [R2]. Libessart, E., Arzel, M., Lahuec, C., & Andriulli, F. (2018, May). 40 Gop/s/mm² fixed-point operators for Brain Computer Interface in 65 nm CMOS. In *2018 IEEE International Symposium on Circuits and Systems (ISCAS)* (pp. 1-4). IEEE.
- [R3]. Dély, A.; Andriulli, F.P.; Cools, K.: 'Stable TD-EFIE Discretized with Implicit Runge-Kutta Methods', *Eucap2018*
- [R4]. Cools, Kristof, and Francesco P. Andriulli. "A boundary element tearing and interconnecting method using two lagrange multipliers." *EUCAP (2018)*: 837-3.
- [R5]. A. Dely, F. P. Andriulli, and K. Cools On a well-conditioned impedance boundary condition EFIE . *Proceedings of the IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, 2017.
- [R6]. S. Adrian, T. Eibert, and F. P. Andriulli Primal and dual wavelets for fast electric field integral equation solutions on unstructured meshes . *Proceedings of the IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, 2017.
- [R7]. A. Merlini, A. Pillain, K. Cools, and F. P. Andriulli On the low-frequency and refinement regularization of the reduced kernel wire EFIE. *Proceedings of the IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, 2017.
- [R8]. E. Libessart, M. Arzel, C. Lahuec, and F. P. Andriulli A scaling-less Newton-Raphson pipelined implementation for a fixed-point inverse square root operator . *Proceedings of the 15th IEEE International New Circuits and Systems Conference (NEWCAS)*, 2017.
- [R9]. J. E. Ortiz Guzman, S. Adrian, R. Mitharwal, Y. Beghein, T. Eibert, K. Cools, and F. P. Andriulli Hierarchical basis preconditioners and their application to the PMWCHT integral equation . *Proceedings of the 10th European Conference on Antennas and*

- Propagation (EuCAP), 2016.
- [R10]. B. Quercia, F. P. Andriulli, and K. Cools Solving the low-frequency breakdown of the wire-EFIE without the search for global loops . Proceedings of the 10th European Conference on Antennas and Propagation (EuCAP), 2016.
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