

Coordinatore GEV-09

Gianluca Setti





Gianluca Setti received a Dr. Eng. degree (with honors) in Electronic Engineering and a Ph.D. degree in Electronic Engineering and Computer Science from the University of Bologna, Bologna in 1992 and in 1997, respectively. From May 1994 to July 1995 he was with the Laboratory of Nonlinear Systems (LANOS) of the Swiss Federal Institute of Technology in Lausanne (EPFL) as Visiting Researcher. Since 1997 he has been with the School of Engineering at the University of Ferrara, Italy, where he is currently a Professor of Electrical Engineering. He has also been Visiting Professor/Scientist at EPFL (2002, 2005), at the University of California San Diego (2004), at the IBM T. J. Watson Laboratories (2007) and at the University of

Washington in Seattle (2008,2010,2011). In 2006-2007 he has been the Editor-in-Chief of the IEEE Transactions on Circuits and Systems – Part II and, in 2008-2009, he has been the Editor-in-Chief of the IEEE Transactions on Circuits and Systems – Part I. In 2010 he has been working as the President of the IEEE Circuits and Systems (CAS) Society. In 2012, he was the Chair of the IEEE Strategic Planning Committee of the Publication Services and Products Board (PSPB-SPC) and in 2013-2014 he was the first non North-American Vice President of the IEEE for Publication Services and Products. Since 2006 he is a Fellow of the IEEE.

His research interests include His research interests include nonlinear circuits, recurrent neural networks, implementation and application of chaotic circuits and systems, statistical signal processing, electromagnetic compatibility, and compressive sensing and biomedical circuits and systems.

Honors and Awards

1. **Fellow of the IEEE** for contributions to application of nonlinear dynamics to communications, signal processing, and information technology, 2006
2. **IEEE CAS Society Meritorious Services Award**, 2013, which honors the individual with exceptional long-term service and dedication to the interest of the CAS Society, received for extraordinary leadership in improving timeliness, technical quality, and the reputations of IEEE TCAS-I and IEEE TCAS-II.
3. **IEEE CAS Society Guillemin-Cauer Award**, 2013 (IEEE Transactions on Circuits and Systems best paper award), for the article “Rakeness in the design of Analog-to-Information Conversion of Sparse and Localized Signals,” IEEE Transactions on Circuits and Systems – Part I, vol. 59, n. 5, pp. 1001 – 1014, 2012, with M. Mangia and R. Rovatti
4. **Best Student Paper Award**, 2011 IEEE International Symposium on Circuits and Systems (ISCAS2011), for the paper “Analog-to-Information Conversion of Sparse and Non-White Signal: Statistical Design of Sensing Waveforms,” with M. Mangia e R. Rovatti
5. **Best Paper Award**, 2005 European Conference on Circuit Theory and Design (ECCTD05), for the paper “Chaos-based High-EMC Spread-Spectrum Clock Generator”, with L. de Michele, F. Pareschi and R. Rovatti
6. **Best Student Paper Award**, 2005 Zurich International Symposium on Electromagnetic Compatibility (EMC Zurich 2005), for the paper “A PLL-based Clock Generator with Improved EMC”, with F. Pareschi, L. de Michele, and R. Rovatti
7. **IEEE CAS Society Darlington Award**, 2004 (IEEE Transactions on Circuits and Systems best paper award for contributions which better close the gap from theory to applications) for the paper “Generation of Constant-Envelope Spread-Spectrum Signals via Chaos-Based FM: Theory and Simulation Results,” IEEE Transactions on Circuits and Systems – Part I, vol. 50, pp. 3-15, 2003, with S. Callegari and R. Rovatti
8. **Distinguished Lecturer**, IEEE CASS, 2004-2005 and 2015-2016
9. “E. Caianiello” Award, Best Italian Ph.D. thesis in the field of Neural Networks, 1997.

Principal Professional Activities

1. **IEEE Vice President for Publication Services and Products**, 2013 and 2014. This was the first time in the history of the IEEE in which the role of VP has been given to a Scientist not from North America. In this role, he succeeded to raise the awareness within IEEE of the weakness of Impact Factor as a quality measure for

journal publication and in promoting the use of EigenFactor and Article Influence as more reliable alternatives. He was also instrumental for the approval by the IEEE Board of Directors in September 2013 of the IEEE Statement on Correct Use of Bibliometric Indicators (for more information, see

2. http://www.ieee.org/publications_standards/publications/rights/bibliometrics_statement.html).
3. **Member, IEEE Board of Directors** (BoD), 2013-2014. The BoD is the governing body of the IEEE and has the legal responsibility to oversee the management of the IEEE and serve the best interests of the Institute, its members and the public
4. **Chair**, 2012 and **Member**, 2011 and 2013, PSPB Strategic Planning Committee
5. **Member**, IEEE Periodic Review and Advisory Committee (PRAC), 2011-2012. The committee has the role to conduct peer review evaluation of all periodicals published by IEEE to ensure it meets its rigorous publication standard.
6. **Member** IEEE TAB Periodical Committee (TAB-PC), 2011-2012. The committee has the role to approve the proposal for new IEEE publication and revise their scope.
7. **President**, IEEE CAS Society, 2010 (first Italian scientist to assume this role)
8. **Editor**, IEEE Access, 2013-2015.
9. **Associate Editor** Proceedings of the IEEE, 2015
10. **Editor-in-Chief**, IEEE Transactions on CAS-I, 2008-2009 (youngest scientist to assume this role since the creation of the journal in 1963). In this role, Dr. Setti succeeded to reduce the average first decision time to about 68 days and the average submission to electronic publication to 8 months. This had no impact on the quality of the journal: in fact, a) the acceptance rate decreased to about 21% and b) the two “per-article” bibliometric indicators published by Thomson Reuters, i.e. the Impact Factor and the Article Influence, in 2008 increased to 2.042 and 0.870, which are the highest that TCAS-I ever had in its entire history.
11. **Editor-in-Chief**, IEEE Transactions on CAS-II, 2006-2007 (youngest scientist and first Italian one to assume this role since the creation of the journal in 1992). In this role Dr. Setti succeeded to reduce the average first decision time to less than 60 days and the average submission to publication time to less than 7 months, without impacting on the journal quality, as proven by the fact that the journal 2007 Impact Factor increased to 1.012, the highest the TCAS-II had in its history until that moment
12. **Deputy Editor-in-Chief**, IEEE CAS Magazine, 2004-2007
13. **Associate Editor**, Hindawi Journal of Electrical and Computer Engineering, 2008-
14. **Associate Editor**, IEEE Transactions on CAS-II, 2004-2005
15. **Associate Editor**, IEEE Transactions on CAS-I, Area: Chaos and bifurcations, 2002-2003
16. **Associate Editor**, IEEE Transactions on CAS-I, Area: Nonlinear Circuits and Systems, 1999-2001
17. **Member of the Board of Governors** (BOG), IEEE (CASS), 2005-present
18. **Member** (2005) and **Chair** (2006) of the Long-Term Strategy Planning Committee, IEEE CASS. In this role, Dr. Setti has been instrumental in the creation of the CAS Society Newsletters
19. **Chair, Chair-Elect, Secretary**, Technical Committee on Nonlinear Circuits and Systems of the IEEE CASS, 1999-2002
20. **Co-Chair, Technical Program**, 2000 IEEE International Special Workshop on Nonlinear Dynamics of Electronics Systems (NDES2000), Catania, Italy
21. **Co-Chair, Special Sessions**, IEEE International Symposium on Circuits and Systems (ISCAS 2005), Kobe, Japan and (ISCAS2006) Kos, Greece
22. **General Co-Chair**, 17th IEEE/IEICE International Symposium on Nonlinear Theory and its Applications (NOLTA2006), Bologna, Italy
23. **Co-Chair, Technical Program**, IEEE International Symposium on Circuits and Systems ISCAS2007, New Orleans, USA, and ISCAS2008, Seattle, USA
24. **Co-Chair Technical Program**, IEEE International Conference on Electronics, Circuits, and Systems (ICECS2012), Seville, Spain
25. **Co-Chair Technical Program**, IEEE International Symposium on Biomedical Circuits and Systems (BioCAS2013), Rotterdam, The Netherlands

26. **Member** of the Technical Program Committees of ISCAS (2000-2015), NDES (2000-2004), ECCTD (2003,2005,2007,2009,2011,2013,2015), APCCAS (2008), NOLTA (2004-2015)
27. **Member** of the Technical Committee on Cellular Neural Networks and Array Computing (2002-2012), on Nonlinear Circuits and Systems (1998-present) and Biomedical Circuits and Systems (2009-present)

Guest Editor of Journals

1. **Co-Guest-Editor of the Proceedings of the IEEE**, Special issue on “Applications of Nonlinear Dynamics to Electronic and Information Engineering”, May 2002.
2. **Co-Guest-Editor** of the IEICE Transactions on Fundamentals, Special Section on “Multi-dimensional Mobile Information Networks”, July 2006.
3. **Co-Guest-Editor** of the IEICE Transactions on Fundamentals, Special Section on “Nonlinear Theory and its Applications”, September 2007.
4. **Associate Guest-Editor** of the IEICE Transactions on Fundamentals on “Nonlinear Theory and its Applications”, September 2004 and September 2005.
5. **Co-Guest-Editor**, of the IEEE Journals on Emerging and Selected Topics in Circuits and Systems (JETCAS), Special Issue on “Circuits, Systems and Algorithms for Compressive Sensing”, September 2012
6. **Guest-Editor** of the IEEE Transactions on Biomedical Circuits and Systems, Special issue on “BioCAS 2013”, October 2014.
7. **Guest-Editor** of the IEEE Transactions on Circuits and Systems – Part I, Special Issue on “ISCAS 2014”, May 2015.
8. **Guest-Editor** of the IEEE Transactions on Circuits and Systems – Part I, Special Issue on “ISCAS 2015”, May 2016.

Selected Books and Journals

1. **Co-Editor of the book**, “Design and Analysis of Biomolecular Circuits,” Springer, 2011
2. **Co-Editor of the book**, “Circuits and Systems for Future Generations of Wireless Communications,” Springer, 2009
3. **Co-Editor of the book**, “Chaotic Electronics in Telecommunications”, CRC Press, Boca Raton, USA, June 2000
4. **Invited Contributor** to the “Wiley Encyclopaedia of Electrical and Electronics Engineering”, New York, USA (J. Webster Editor), 1999.

Selected Tutorials

1. Tutorial Organizer on “Compressive Sensing: From Theory to Circuits and Systems Implementation and Applications”, IEEE International Symposium on Circuits and Systems (ISCAS2015), Lisbon, Portugal, May 2015
2. Tutorial Organizer on “Discrete-Time Chaotic Systems: Mathematical Tools and Communication Applications”, IEEE Global Communications Conference (Globecom2003), San Francisco, USA, December 2003.
3. Invited Tutorials on “Chaos-Based Code Generation” (invited by Dr. Christopher Patrick Silva, The Aerospace Corporation), IEEE International Microwave Symposium (IMS2003), Philadelphia, USA, June 2003.
4. Invited Tutorial on “Tensor Based Analysis of Quantized Chaotic Pseudo-Markov Processes,” and “FM-based Generation of high EMC Timing Signals” (invited by Prof. W. Schwarz, Technical University of Dresden Germany), ISCAS2003, Bangkok, Thailand, May 2003.

5. Invited Tutorial on “Statistical Modelling of Quantized Discrete Time Chaotic Processes and Application to DS-CDMA Systems Optimization”, (invited by Prof. M. Ogorzalek, University of Mining and Metallurgy, Krakow, Poland), ECCTD01, Helsinki, Finland, August 2001.
6. Tutorial Organizer on “Statistical Approach to Discrete-Time Chaotic Systems: Some Tools for Studying Chaos with Densities and Applications to EMI Reduction”, ISCAS2001, Sydney, Australia, May 2001.

Dr. Setti held also several invited lectures at, among others, Portland State University (Portland, USA), Northeastern University (Boston, USA), IBM T. J. Watson Research Laboratories (Yorktown Heights, USA), STMicroelectronics (San Diego, USA) Siemens (Munich, Germany), National Semiconductors (Santa Clara, USA), Centre National d'Etudes Spatiales, (Tolosa, France). He also organized several special sessions at ISCAS (5), BioCAS(1), NOLTA (6), ECCTD (1), ISSTA (1) and ISITA (1).

Keynote Lectures

1. IEEE/IEICE International Symposium on Nonlinear Theory and its Applications (NOLTA 2005), Lecture on “Information Technology Applications of Statistical Nonlinear Dynamics: Key Results and Future Trends”, Bruges, October 2005
2. IEEE International Conference on Electronics, Circuits, and Systems (ICECS2008), Lecture on “Information Technology Applications of Statistical Nonlinear Dynamics”, Malta, September 2008
3. IEEE International Conference on Green Circuits and Systems (ICGCS2010), Lecture on “EMI Reduction Methods Based on Nonlinear Dynamics”, Shanghai, June 2010
4. IEEE Asia Pacific Conference on Circuits and Systems (APCCAS2012) Lecture on “Compressive Sensing: From Algorithm to Circuits and Systems Architectures”
5. RESMIQ Innovation Days 2015 (RID2015), Lecture on “Compressive Sensing: From Algorithms to Circuits”;

Selected national and international research projects

For each project are reported Project Title, Duration, Role of Dr. Setti, Fund and Funding Agency

1. EMC Characterization of Integrated Circuits, 1998-2000, Participant, 50kEURO CNR (Italy)
2. Innovative Signal Processing Exploiting Chaotic Dynamics (Esprit-31103, Inspect), 1998-2001, Co-Investigator, 150kEURO, EC
3. Chaos, Communication and Randomness, 1998-2002, External Consultant, EPSRC (UK)
4. Analysis of EMC Performances of Integrated Circuits, with emphasis on voltage references, 1998-2000, Participant, 60kEURO, CNR (Italy)
5. Statistical Aspects of Nonlinear Dynamical Circuits and Systems with Applications to Chaos and Communications Modelling, 2001-2003, Co-investigator, 30kEURO EPSRC (UK)
6. Theoretical performance limits of chaotic spreading sequences in DS-CDMA systems, 2003-2004, Participant, 70kEURO, MIUR (Italy)
7. Enabling Technologies for Reconfigurable Wireless Mobile Terminals, 2003-2006, Participant, 2000kEURO, MIUR (Italy)
8. 8Methods for the Statistical Characterization of Nonlinear Dynamical Systems with Application to Information and Electrical Engineering, 2004-2006, Co-investigator, 175kEURO, MIUR (Italy)
9. Innovative Methodologies for Analysis and Design of Chaotic Circuits, 2003-2005, Principal investigator, 150kEURO, MIUR (Italy)
10. European Doctorate in Information Technology (EDITH), 2004-2008, Co-Coordinator, 2000kEURO, EC. Partners of the European Ph.D. program are: Delft University of Technology, The Netherlands, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, Institut National Polytechnique de Grenoble

(INPG), France, Katholieke Universiteit Leuven, Belgium, Commissariat à l'Energie Atomique, Laboratoire d'Electronique, de Technologie de l'Information (CEA-LETI), France, IMEC, Belgium.

11. Internationalization Project on Application of Nonlinear Dynamics to Information Engineering, 2005-2010, Principal Investigator, 90kEURO, MIUR. Partners of the project are: Queen Mary University of London, UK, Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland, IBM, T. J. Watson Research Laboratories, United States, University of California San Diego (UCSD), United States, Northeastern University, Boston, United States, University of Washington at Seattle, United States, STMicroelectronics, Switzerland.
12. Chaos-based spread-spectrum timing signal generation for EMI reduction in switching power converters (REDEMI), 2010-2011, Principal Investigator, National Semiconductors, 48kEURO.
13. Innovative Circuits Solutions for Biological Signal Processing Exploiting Compressive Sensing (BIOCOMP), 2011-2013, Principal Investigator, National Semiconductors, 64kEURO
14. Innovative Design Methodologies for Bi-directional Power-line Communication in Isolated Resonant Switching Converters (IDeM2CIRC), Principal Investigator, Texas Instruments, 100kEURO

Dr. Setti received the request to act as a reviewer for the following international funding agencies: National Science Foundation (NSF), USA, Engineering and Physical Sciences Research Council (EPSRC), UK, Science Foundation Ireland, IR, National Research Foundation of the UAE (NRF), UAE, as well as a nominator for the Japan Prize (500kEURO) issued by the Science and Technology Foundation of Japan.