

# Nonlinear Circuits and Systems Technical Committee

## Annual Report 2016

May 25, 2015 – May 23, 2016

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Institute of Electrical and  
Electronic Engineers



Circuits and Systems  
Society

Nonlinear Circuits and  
Systems Technical  
Committee

### Introduction

It has been another intense and fruitful year for the Nonlinear Circuits and Systems Technical Committee (NCAS-TC). With some new members joining and some members leaving due to mutated research interests, the Committee size has remained substantially stable, slightly over 80 members. As illustrated in this document, they have been involved in a large number of tasks, including publications, lecturing, editorial activities and the organization of scientific events, always advancing and promoting the field of nonlinear circuits and systems. One major activity has been, as usual, the organization of the Nonlinear Circuits and Systems Track at ISCAS, the flagship conference of the Circuits and Systems Society (CASS). Nonetheless, the Committee members have worked hard on many other fronts, among which the large amount of reviewing is worth recalling, both for its being time consuming and always practiced with great commitment and because it is invaluable in guaranteeing the quality of conference presentations and scientific publications, even if it is less visible than other duties and almost impossible to credit in a report.

This document covers the period between the International Symposium on Circuits and Systems (ISCAS) 2015 edition held in Lisbon, Portugal and the ISCAS 2016 edition held in Montreal, Canada. It is based on data received from 25 members of the NCAS-TC immediately before ISCAS 2016. At that time, the Committee counted 82 members. The amount of input received to prepare this report is in line with the number of the most responsive members in the Technical Committee. However, being this just a fraction of the overall membership, the research products recorded herein can necessarily provide only a partial picture of the many accomplishments. Thus, the following data needs to be read with a word of caution. Some numbers, such as the number of journal and conference publications, should probably be scaled up by some factor between 2 and 3 to give a realistic view of the publication activity in the Committee focus area. Others, such as the number of special sessions or invited lectures, should be already sufficiently adherent to the Committee outputs, being inherently connected with the most active and responsive members. In any case, this report is believed to provide a representative view of the research directions taken by the Committee members.

The report is organized as follows:

**Part I** describes the activity of the individual Technical Committee members in the framework of the Committee activities and focus area;

**Part II** provides a summary of the significant events in the Technical Committee history through the year; finally

**Part III** provides some data about the organization of the Nonlinear Circuits and Systems Track at ISCAS and some hints at the Committee involvement in other conferences.

The latter two parts are a novelty with respect to the previous years reports.

As an anticipation of the following content, in 2015–16 the Committee members:

- authored 2 scientific books;
- co-edited 3 scientific books;
- served as guest editors for 5 special issues on scientific journals;
- organized 5 special sessions at international conferences;
- delivered 33 invited lectures in major conferences and workshop related to Circuits and Systems.
- prepared or delivered 3 tutorials/seminars at conferences or other scientific events.

Part I.

## Activity of the Technical Committee Members

### 1. Lecturing activity at Conferences and Events

Many members of the NCAS-TC enjoy a significant international recognition. Together with their approachability and availability, this has traditionally resulted in a large number of invited talks, keynote speeches, tutorials, short courses and seminars, the last year being no exception. An aspect that is worth underlining is that the Technical Committee has shown, since its very institution, a remarkable attention towards *education* aspects. Many of the talks not only involve hot research topics, but also provide dissemination and a path for young scientists to approach the (Nonlinear) Circuits and Systems. This is further testified by a large degree of cooperation with local universities and IEEE Chapters. Finally, it is worth underlining that during the past year some NCAS-TC members were also involved in motivational talks, promoting not just the area, but the whole concept of achievement in a scientific career.

#### 1.1. Keynote Speeches, Plenary Lectures and Invited Lectures

1. Ahmed Elwakil was a Keynote Speaker at the 39<sup>th</sup> Int. Conf. on Telecommunications & Signal Processing, Vienna, Austria, June 27-29, 2016, delivering an invited lecture on Signal Processing.

**Lecture title:** Fractional-Order Circuits and Systems: An Emerging Interdisciplinary Research Topic

**Abstract:** Fractional-order continuous-time systems were labeled as the “21st century systems”. Indeed, this emerging research area is slowly gaining momentum among scientists and engineers while its deeply rooted mathematical concepts also slowly migrate to various scientific disciplines. Fractional-order systems are centered around the concepts of fractional calculus which enables differentiation and integration to any arbitrary non-integr order. For example, a differential equation of order 1.5 is valid under fractional calculus and so is a derivative of order 0.5. A very important aspect of research in fractional-order circuits and systems is that it is an interdisciplinary subject. Specifically, it is an area where biochemistry, medicine, material science, applied mathematics and electrical engineering overlap giving rise to many new potential applications. This talk aims to provide an overview of the current status of research in this

area, highlighting specific problems which need to be addressed and future perspectives.

2. Zbigniew Galias gave an invited lecture at the International Workshop on Nonlinear Maps and their Applications, NOMA 2015, June 15–16, 2015, Dublin.

**Lecture title:** Are numerical studies of long term dynamics of nonlinear systems conclusive: the case of the Hénon map

3. Lipo Wang was a Keynote Speaker at the International Conference on Power, Circuits, and Information Technology (ICPCIT2016) & 2016 International Conference on Artificial Intelligence and Evolutionary Computation in Engineering Systems (ICAIECES2016), 19-21 May 2016, SRM University, Chennai, India
4. Lipo Wang was a Keynote Speaker at the International Conference on Recent Trends in Engineering and Material Science (ICEMS 2016), 17-19 March 2016, Jaipur National University, Jaipur, India
5. Lipo Wang was a Keynote Speaker at the International Conference on Emerging Trends in Engineering, Technology, and Science (ICETETS 2016), 24-26 February, Kings College of Engineering, Punalkulam, India
6. Lipo Wang was a Keynote Speaker at the International Conference on Recent Trends and Challenges in Computational Models (ICRTCCM 2016), 11-12 February 2016, University College of Engineering, Tindivanam, Anna University, India
7. Lipo Wang was a Keynote Speaker at the 5th International Conference on Soft Computing for Problem Solving (SocProS 2015), 18-20 December 2015, India Institute of Technology Roorkee, India  
**Lecture title:** Image Search and Retrieval Using Support Vector Machines
8. Lipo Wang was a Keynote Speaker at the International Conference on Micro Electronics, Electromagnetics and Telecommunications (ICMEET 2015), 18-19 December 2015, India
9. Lipo Wang was a Plenary Speaker at the 25<sup>th</sup> Italian Workshop on Neural Networks (WIRN 2015), May 20-22, 2015, Vietri sul Mare, Salerno, Italy
10. Xiang Li was a Keynote Speaker at the “Controlling Complex Networks” Satellite Symposium of the NetSci’2015 International School and Conference on Network Science, June 2015, Zaragoza, Spain
11. Xiang Li was an Invited Speaker at the IEEE Int. Workshop of Complex Systems and Networks (IWCSN) 2015, Oct 2015, Perth, Australia
12. Xiang Li was an Invited Forum Speaker at the 2015 Chinese Automation Congress, Nov. 2015, Wuhan
13. Xiang Li was a Keynote Speaker at the 2015 Moli-Gerlman Complexity Forum, Nov. 2015, Wuhan
14. Xiang Li was a Keynote Speaker at the Workshop of Network Science and Internet+ with Big Data, Dec. 2015, Shenzhen
15. Xiang Li was a Keynote Speaker at the 2016 Chinese Forum of Networks Science, April 2016, Tianjin
16. Xiang Li was a Keynote Speaker at the Workshop of Future Network Science, April 2016, Nanjin, China

17. Ljiljana Trajkovic gave a keynote talk at the 13<sup>th</sup> IEEE International Conference on Networking, Sensing and Control (ICNSC 2016), Mexico City, Mexico, April 2016  
**Lecture title:** Mining Network Traffic Data
18. Ljiljana Trajkovic gave an invited talk at the Daffodil International University, Dhaka, Bangladesh, December 2015  
**Lecture title:** Communication Networks: Traffic Data, Network Topologies, and Routing Anomalies
19. Ljiljana Trajkovic gave an invited talk at the Independent University, Bangladesh, Dhaka, Bangladesh, December 2015  
**Lecture title:** Communication Networks: Traffic Data, Network Topologies, and Routing Anomalies
20. Ljiljana Trajkovic gave a keynote talk at the 3<sup>rd</sup> International Conference on Advances in Electrical Engineering (ICAEE), Dhaka, Bangladesh, December 2015  
**Lecture title:** Communication Networks: Traffic Data, Network Topologies, and Routing Anomalies
21. Ljiljana Trajkovic gave a keynote talk at the IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering 2015 (WIECON-ECE 2015), Dhaka, Bangladesh, December 2015  
**Lecture title:** Communication Networks: Traffic Data, Network Topologies, and Routing Anomalies
22. Ljiljana Trajkovic gave an invited talk at the IEEE International Conference on Systems, Man, and Cybernetics (SMC 2015), Hong Kong SAR, China, October 2015  
**Lecture title:** You and Your Career
23. Ljiljana Trajkovic gave an invited talk at the 2015 IEEE International Workshop on Complex Systems and Networks (IWCSN 2015), Perth, Australia, Oct. 2015  
**Lecture title:** Virtual Network Embedding Algorithms for Software Defined Networks
24. Ljiljana Trajkovic gave a keynote talk at the 13<sup>th</sup> IEEE International Symposium on Intelligent Systems and Informatics (SiSY 2015), Subotica, Serbia, Sept. 2015  
**Lecture title:** Traffic Data, Network Topologies, and Routing Anomalies
25. Ljiljana Trajkovic gave an invited talk at the Universiti Malaysia Perlis, Kangar, Malaysia, Sept. 2015  
**Lecture title:** You and Your Career
26. Ljiljana Trajkovic gave a keynote talk at the 2015 IEEE International Circuits and Systems Symposium (ICSyS 2015), Langkawi, Malaysia, Sept. 2015  
**Lecture title:** Communication Networks: Traffic Data, Network Topologies, and Routing Anomalies
27. Ljiljana Trajkovic gave an invited talk at the WiCAS Program 2015, Langkawi, Malaysia, Sept. 2015  
**Lecture title:** You and Your Career
28. Chai Wah Wu gave an invited lecture at IEEE EWCSN 2015
29. Hiroo Sekiya gave a Keynote Speech at 2015 Taiwan and Japan Conference on Circuits and Systems (TJCAS 2015), Aug 20, 2015

**Lecture title:** Designs of High-Frequency and High-Efficiency Amplifiers: Applications of computation algorithm of bifurcation analyses to amplifier designs

30. Hiroo Sekiya gave an invited talk at 2015 IEEE CAS Malaysia Networking HighTea, Oct 28, 2015

**Lecture title:** Analysis and design of high-frequency high-efficiency WPT systems

31. Hiroo Sekiya gave an invited lecture at Nanyang Technological University for IEEE Region 10 Networking, Oct 26, 2015.

**Lecture title:** Analysis and design of high-frequency high-efficiency WPT systems

32. Abdelali El Aroudi gave a talk as invited researcher in the Intensive Research Programme on Advances in Nonsmooth Dynamics held at the *Centre de Recerca Matemàtica*, which is a Center dedicated to improving research and advanced training in Mathematics, in collaboration with Universities and other research institutions in Catalunya

**Lecture title:** Sliding-Mode Control and Stability Analysis of DC-DC Switching Converters

33. Abdelali El Aroudi gave a talk as invited researcher in the Intensive Research Programme on Advances in Nonsmooth Dynamics held at the *Centre de Recerca Matemàtica*, which is a Center dedicated to improving research and advanced training in Mathematics, in collaboration with Universities and other research institutions in Catalunya

**Lecture title:** What ruined the band count doubling in an AC-DC boost PFC circuit?

## 1.2. Tutorials, Short Courses and Seminars

1. Elena Blokhina and Dimitri Galayko prepared a tutorial for the the IEEE International Symposium on Circuits and Systems (ISCAS) 2016 in Montreal.

**Title:** Design of State-of-the-art Conditioning Electronics for Electrostatic (Capacitive) Kinetic Energy Harvesters: from External Vibrations to the Load

The tutorial was eventually cancelled from the conference program due to organizational constraints, but will likely be proposed at future conferences.

2. Hideki Asai presented a tutorial at the IEEE EDAPS 2015 Conference, Dec 2015

**Title:** Advanced SI/PI/EMI Simulation Technology for Electrical Design Optimization — An Application to Automotive ECU Design

3. Hideki Asai presented a seminar organized by the IEEE, EMC Singapore Chapter, in Jul 2015

**Title:** Optimization of Common-mode Noise for Automotive EMC Design

## 2. Participation in the Distinguished Lecturer Program

No participation in the Distinguished Lecturer Program has been reported for this year, even if the NCAS-TC member Gianluca Setti was part of the CASS Distinguished Lecturer Program roster in 2015-16.

### 3. Editorial Services

The good international reputation of its members and their commitment to quality means that the Technical Committee was very well represented across the editorial boards of scientific journals and the program committees of international conferences. As evident from the following lists, the participation is not limited to journals and conferences in the Circuits and Systems area, but also involves math, statistics, physics, power electronics, bio-engineering, automatic control, computational intelligence, and more. This reflects the fact that the Committee is by its very definition wide spectrum, and highly devoted to cooperation with other research areas. In fact, in many cases and disciplines, new applications or developments root in fundamental theories involving nonlinear aspects.

The editorial services also testify a significant cooperation with Institute of Electronics, Information and Communication Engineers (IEICE), through its Nonlinear Circuits and its Applications Conference Series and Journal.

#### 3.1. Activity on the Editorial Boards of Scientific Journals

1. Ahmed Elwakil was Associate Editor for the International Journal of Bifurcation & Chaos, published by World Scientific with an term started in 2014
2. Ahmed Elwakil was Associate Editor for the International Journal of Circuit Theory & Applications, published by Wiley, with an term started in 2013
3. Ahmed Elwakil was a member of the Senior Editorial Board of the IEEE Journal on Emerging & Selected Topics in Circuits & Systems, with an term started in 2015
4. Ahmed Elwakil was a Guest editor for a special issue on “Fractional-Order Circuits: Theory, Design, and Applications”, for the Circuits Systems and Signal Processing Journal published by Springer in 2016 (vol. 35, no. 6, pp. 1807-1813)
5. Elena Blokhina was Associate Editor for the IEEE Transactions on Circuits and Systems — Part I in the framework of a 2016-2017 appointment
6. Elena Blokhina was Guest Editor for an issue of the Analog Integrated Circuits and Signal Processing Journal, published by Springer, in 2015
7. Elena Blokhina was a Member of the Editorial Board for the Frontiers in Applied Mathematics and Statistics Journal, in 2016
8. Elena Blokhina was Guest Editor for a Special Issue of the IOP Science Journal of Physics in the Conference Series in 2015, with the Issue being focused on Selected papers of International Workshop on Nonlinear Maps and their Applications (NOMA) 2015
9. Wallace K. S. Tang was Associate Editor for the IEEE Transactions on Industrial Electronics, in the framework of a Jan 2013 – Dec 2015 appointment
10. Wallace K. S. Tang was Associate Editor for the IEEE Transactions on Circuits and Systems — Part II, with a term started in Jan 2016
11. Wallace K. S. Tang was Associate Editor for the International Journal of Bifurcation and Chaos, with a term started in 2012
12. Wallace K. S. Tang was Associate Editor for the Nonlinear Theory and Its Applications (NOLTA) Journal, published by IEICE, with a term started in May 2013
13. Zbigniew Galias was Associate Editor for the IEEE Circuits and Systems Magazine in the framework of a 2014–2015 appointment

14. Zbigniew Galias was Associate Editor for the International Journal of Bifurcation and Chaos with a term started in 2012
15. Zbigniew Galias was Associate Editor for the Nonlinear Theory and Its Applications (NOLTA) Journal, published by IEICE with a term started in 2013
16. Zbigniew Galias was Associate Editor for the IEEE Transactions Circuits and Systems — Part II, in the framework of a 2016-2017 appointment
17. Lipo Wang was Associate Editor for Soft Computing: An International Journal with a term started in 2006
18. Lipo Wang was Editorial Board Member for the journal Cognitive Neurodynamics with a term started in 2005
19. Lipo Wang was Editorial Board Member for Automatic Control, a series of Technical Transactions, with a term started in 2013
20. Lipo Wang was Editorial Board Member for the International Journal on Business Intelligence and Data Mining, with a term started in 2004
21. Lipo Wang was Editorial Board Member for the International Journal of Computational Intelligence and Applications, with a term started in 2006
22. Lipo Wang was Editorial Board Member, for the International Journal of Computational Intelligence Theory and Practice, with a term started in 2006
23. Lipo Wang was Editorial Board Member for the journal International Review on Computers and Software, with a term started in 2006
24. Lipo Wang was Editorial Board Member for the International Journal of Information Technology and Intelligent Computing, with a term started in 2006
25. Lipo Wang was Editorial Board Member for the journal Recent Patents on Electrical Engineering, with a term started in 2007
26. Lipo Wang was Editorial Board Member for the journal Evolutionary Intelligence, in the framework of a 2008–2015 appointment
27. Hideki Asai was Guest Editor for the a Special Issue of the Analog Integrated Circuits and Signal Processing journal, published by Springer, on “High performance analog circuits and design methodologies” (Sept.2015)
28. Federico Bizzarri was Associate Editor for the IEEE Transactions on Circuits and Systems — Part I, in the framework of a 2014–2015 appointment
29. Mustak E. Yalçın was Associate Editor for the International Journal of Bifurcation and Chaos (IJBC)
30. Francis Lau was Associate Editor for the IEEE Transactions on Circuits and Systems — Part II with a term started in 2016
31. Francis Lau was Guest Associate Editor for the International Journal of Bifurcations and Chaos cooperating with the journal since 2010
32. Francis Lau was Associate Editor for the IEEE Circuits and Systems Magazine, in the framwork of a 2012–2015 appointment
33. Wei Xing Zheng was Associate Editor for the journal Automatica with a term started in 2011

34. Wei Xing Zheng was Associate Editor for the IEEE Transactions on Automatic Control with a term started in 2013
35. Wei Xing Zheng was Associate Editor for the IEEE Transactions on Cybernetics with a term started in 2014
36. Wei Xing Zheng was Associate Editor for the IEEE Transactions on Neural Networks and Learning Systems with a term started in 2015
37. Wei Xing Zheng was Associate Editor for the journal IET Control Theory & Applications with a term started in 2013
38. Wei Xing Zheng was Associate Editor for the journal Circuits, Systems and Signal Processing with a term started in 2014
39. Dimitri Galayko was Associate Editor for the IEEE Transactions on Circuits and Systems — Part II, with a term started in Jan 2016
40. Xiang Li was Associate Editor for the IEEE Trans. Circuits and Systems — Part I: Regular Papers
41. Xiang Li was Associate Editor for the IEEE Circuits and Systems Society Newsletter
42. Xiang Li was Associate Editor for the journal Control Engineering Practice
43. Herbert Lu was Associate Editor for the IEEE Transactions on Circuits and Systems — Part II with a term started in Jan 2016
44. Herbert Lu was a member of the Senior Editorial Board for the IEEE Journal on Emerging and Selected Topics in Circuits and Systems with a term started in Jan 2016
45. Herbert Lu was Associate Editor for IEEE Access, with a term started in 2015
46. Herbert Lu was Associate Editor for the IEEE Circuits and Systems Society Newsletter, with a term started in 2008
47. Hebert Lu, Damian Giaouris, Abdelali El Aroudi, and Ian Hiskens were Guest Co-Editors for a Special Issue of the IEEE Journal on Emerging and Selected Topics in Circuits and Systems on the “Design of Energy-Efficient Distributed Power Generation Systems” that went in press in Sep 2015
48. Ljiljana Trajkovic was Associate Editor for the IEICE Nonlinear Theory and its Applications (NOLTA) journal, with a term started in 2009
49. Ljiljana Trajkovic was Special Sessions Co-Chair at the IEEE International Conference on Systems, Man, and Cybernetics, SMC 2017
50. Ljiljana Trajkovic was Associate Editor for the IEEE RFID Virtual Journal, with a term started in 2013
51. Ljiljana Trajkovic was a Member of the Editorial Board of the Serbian Journal of Electrical Engineering, with a term started in 2003.
52. Sergio Callegari was Associate Editor for the IEEE Transactions on Circuits and Systems — Part II: Express Briefs, with a term started in Jan 2016.
53. Sergio Callegari was Associate Editor for the IEICE Nonlinear Theory and its Applications (NOLTA) Journal, with a term started in 2013
54. Sergio Callegari was a member of the Editorial Board (Computer Engineering Area) for the Hindawi International Scholarly Research Notes



55. Sergio Callegari was a member of the Editorial Advisory Board for the Bentham Science journal Recent Patents on Electrical and Electronic Engineering, with a term started in 2008
56. Sergio Callegari was a Guest Associate Editor for the IOP Journal of Physics, with reference to a Special Issue with Selected papers from the International Workshop on Nonlinear Maps and their Applications (NOMA) 2015, published in the Conference Series of the Journal
57. Sergio Callegari was Associate Editor for the IEICE Nonlinear Theory and its Applications (NOLTA) Journal with reference to a Special Section on Random/Pseudorandom Numbers edited by Yoshiyasu Tamura
58. Cem Gökner was an Editor for the International Journal of Circuit Theory and Applications up to 2015
59. Chai Wah Wu was Deputy Editor-in-Chief for the IEEE Circuits and Systems Magazine in the framework of a 2014–2015 appointment
60. Chai Wah Wu was and is Editor in Chief for the IEEE Circuits and Systems Magazine, in the framework of a 2016–2017 appointment
61. Chai Wah Wu was a member of the Senior Editorial Board of the IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS) in the framework of a 2014–2015 appointment
62. Michael Peter Kennedy was a Member of the Editorial Board of the IEICE Nonlinear Theory and its Applications (NOLTA) Journal
63. Hiroo Sekiya was Associate Editor of the IET Circuits Device and Systems journal.
64. Hiroo Sekiya was Associate Editor of the IEICE Nonlinear Theory and its Applications (NOLTA) journal.
65. Hiroo Sekiya was a member of the Editorial Committee for the IEICE Communication Express journal.
66. Hiroo Sekiya was Associate Editor for the International Journal of Renewable Energy Research — IJRER.
67. Abelali El Aroudi was Associate Editor of the IEE IET Power Electronics journal.

### **3.2. Activity in the Technical Program Committees of Scientific Conferences**

1. Ahmed Elwakil received appointment as Program Committee Member for the 12<sup>th</sup> International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2016), 13-15 August 2016, Changsha, China
2. Alessandro Colombo was Review Committee Members for the IEEE International Symposium on Circuits and Systems (ISCAS) 2016, 22-25 May 2016, Montreal, Canada
3. Sergio Callegari was Review Committee Members for the IEEE International Symposium on Circuits and Systems (ISCAS) 2016, 22-25 May 2016, Montreal, Canada
4. Elena Blokhina was Review Committee Members for the IEEE International Symposium on Circuits and Systems (ISCAS) 2016, 22-25 May 2016, Montreal, Canada
5. Elena Blokhina was a Member of the Program Committee for the IEEE Latin American Symposium on Circuits and Systems (LASCAS) 2016, 28 February - 2 March, Florianopolis, Brazil

6. Elena Blokhina was a Member of the Program Committee for the Design, Test, Integration and Packaging of MEMS and MOEMS (DTIP) 2016 Conference, 30 May - 2 June, Budapest, Hungary
7. Elena Blokhina was a Member of the Technical Program Committee for the European Symposium on Reliability of Electron Devices, Failure Physics and Analysis (ESREF) 2015, 5 - 9 October 2015, Toulouse, France
8. Alessandro Colombo was a Member of the Technical Program Committee for the Globecom - Global Communications Conference, Exhibition and Industry Forum, 6-10 December 2015, San Diego, CA, USA
9. Hideki Asai was a Member of the Technical Program Committee at APEMC 2015, in Taipei
10. Hideki Asai was a Member of the Technical Program Committee at EDAPS 2015, in Seoul
11. Federico Bizzarri was a member of the Review Committee for the 2015 IEEE International Symposium on Circuits and Systems (ISCAS) Lisbon, Portugal 24-27 May 2015
12. Mustek E. Yalçın was Track Chair at the 2015 IEEE International Conference on Electronics, Circuits, and Systems, Cairo, Egypt, December 06-09, 2015
13. Mustek E. Yalçın was a Program Committee Member at the 5<sup>th</sup> International Conference on Modern Circuits and Systems Technologies (MOCASST)
14. Mustek E. Yalçın was a Program Committee Member at the 2015 11<sup>th</sup> International Conference on Natural Computation (ICNC'15), 15-17 August 2015 in Zhangjiajie, China.
15. Mustek E. Yalçın was a Program Committee Member at the 2015 12<sup>th</sup> International Conference on Fuzzy Systems and Knowledge Discovery (FSKD'15), 15-17 August 2015 in Zhangjiajie, China.
16. Wei Xing Zheng was a member of the Review Committee for the 48<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2015), Lisbon, Portugal, May 2015
17. Wei Xing Zheng was a Program Committee Member of the 34<sup>th</sup> Chinese Control Conference (CCC'2015), Hangzhou, Zhejiang, China, July 2015.
18. Wei Xing Zheng was a Program Committee Member of the 2015 IEEE International Conference on Information and Automation (ICIA'2015), Lijiang, Yunnan, China, August 2015
19. Wei Xing Zheng was an International Program Committee Member of the 4<sup>th</sup> IFAC Conference on Analysis and Control of Chaotic Systems (CHAOS'2015), Tokyo, Japan, August 2015
20. Wei Xing Zheng was an International Program Committee Member of the 17<sup>th</sup> IFAC Symposium on System Identification (SYSID'2015), Beijing, China, 19-21 October 2015
21. Wei Xing Zheng was a Technical Program Committee Member of the 5<sup>th</sup> Australian Control Conference (AUCC'2015), Gold Coast, Australia, November 2015
22. Wei Xing Zheng was a Program Committee Member of the 54<sup>th</sup> IEEE Conference on Decision and Control (CDC'2015), Osaka, Japan, December 2015

23. Wei Xing Zheng was a member of the Review Committee for the 49<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2016), Montreal, Canada, May 2016
24. Prof. Wei Xing Zheng was a Technical Program Committee Member of the 28<sup>th</sup> Chinese Control and Decision Conference (CCDC'2016), Yinchuan, Ningxia, China, May 2016
25. Wei Xing Zheng serves as an International Program Committee Member of the 2016 UKACC (United Kingdom Automatic Control Council) International Conference on Control (UKACC'2016), Belfast, Northern Ireland, UK, September 2016
26. Wei Xing Zheng serves as a Program Committee Member of the 55<sup>th</sup> IEEE Conference on Decision and Control (CDC'2016), Las Vegas, Nevada, USA, December 2016
27. Dimitri Galayko was a Member of the Technical Program Committee for the IEEE PRIME 2016 Conference
28. Xiang Li was Technical Program Committee Chair for the Chinese Conference of Complex Networks (CCCN) 2015, August 2015, Beijing
29. Xiang Li was a member of the Technical Program Committee for the 1<sup>st</sup> Int. workshop on Data Management and Analytics for Medicine and Healthcare, Sept. 2015, Hawaii
30. Xiang Li was Track Chair for the Nonlinear Circuits and Systems area at ISCAS 2016, May 2016, Montreal
31. Ljiljana Trajkovic was Technical Program Co-Chair at the 29<sup>th</sup> Annual IEEE Canadian Conference on Electrical and Computer Engineering, CCECE 2016
32. Ljiljana Trajkovic was Technical Program Co-Chair at the 6<sup>th</sup> International Conference and Workshop on Computing and Communication, IEMCON 2015
33. Wallace K. S. Tang was Special Session Co-Chair at the 2015 International Symposium on Nonlinear Theory and Its Applications (NOLTA) in December 2015
34. Lipo Wang was Technical Co-Chair at the 2016 International Joint Conference on Neural Networks (IJCNN 2016, a part of the 2016 IEEE World Congress on Computational Intelligence - WCCI 2016, Vancouver, Canada, 25-29 July 2016)
35. Sergio Callegari was a member of the Program Committee for the IEEE Latin American Symposium on Circuits and Systems (LASCAS) 2015
36. Sergio Callegari was a member of the Program Committee for the IEEE Latin American Symposium on Circuits and Systems (LASCAS) 2016,
37. Sergio Callegari was a Member of the Review Committee for the Nonlinear Circuits and Systems Area in the IEEE International Symposium on Circuits and Systems (ISCAS) 2015
38. Sergio Callegari was a Member of the Review Committee for the Nonlinear Circuits and Systems Area in the IEEE International Symposium on Circuits and Systems (ISCAS) 2016
39. Cem Goknar was a member fo the Scientific and Program Committees at the European conference on circuit theory and design, ECCTD2015, 24-26 Aug 2015.
40. Michael Peter Kennedy was a member of the Program Committee for the 22<sup>nd</sup> European conference on circuit theory and design, ECCTD 2015
41. Michael Peter Kennedy was a member of the Program Committee for the 11<sup>th</sup> Conference on PhD Research in Microelectronics and Electronics, IEEE PRIME 2015

42. Abdelali El Aroudi was a Program Comitee member of the IEEE Latin American Symposium on Circuits and Systems (LASCAS)
43. Abdelali El Aroudi was a member of the steering committee of International Conference on Applied Automation and Industrial Diagnostic, ICAADI 2015 Algeria
44. Abdelali El Aroudi was a member of the steering committee of International Conference on Power Electronics and their Applications ICPEA 2015, Algeria.
45. Abdelali El Aroudi was a member of Technical Program Comitee of the 3<sup>rd</sup> International Renewable and Sustainable Energy Conference (IRSEC'15), December 10-13, 2015, Marrakech & Ouarzazate, Morocco.

### 3.3. Organization of Special Sessions

1. Elena Blokhina and Dimitri Galayko organized a special session at the IEEE International Symposium on Circuits and Systems 2015 in Lisbon, Portugal.  
**Session title:** Complexity in the Design of Systems-on-a-Chip
2. Ahmed Elwakil was Chair of a Special Session at NOLTA'15, Dec.1-4, Hong-Kong, 2015  
**Session title:** Fundamental Nonlinear Elements in Circuit Theory and Applications
3. Hideki Asai was Session organizer and chair in APCAP 2015, in Bali (Indonesia).
4. Cem Gökner organized a Special Session with invited talks at ELECO 2015 in the framework of a CASS outreach project  
**Session title:** New Directions in EE Education and the Position of CAS Courses
5. Chai Wah Wu co-edited a Special Session for ISCAS 2016  
**Session title:** Late Breaking News

### 3.4. Organization of Conferences and Events

1. Elena Blokhina was a member of the Organizing Committee, Co-Chair of Young Professionals, and Co-Organizer of a technical forum for MSc and PhD students in the area of circuits and system at the IEEE International Conference on Electronics, Circuits and Systems (ICECS) 2015 in Cairo, Egypt.
2. Elena Blokhina was an Organizer and General Chair of the International Workshop on Nonlinear Maps and their Applications (NOMA) 2015 in Dublin.
3. Mustak E. Yalçın was Conference Chair at the 7<sup>th</sup> International Scientific Conference on Physics and Control, 19-22 August, 2015, Istanbul, Turkey
4. Chi Tsun (Ben) Cheng was Workshop Co-Chair at the 7<sup>th</sup> International Conference on Cyber-enabled distributed computing and knowledge discovery (CyberC 2015), Xi'an, China, September 17-19, 2015
5. Chi Tsun (Ben) Cheng was Local Arrangement Co-Chair at the 2015 International Symposium on Nonlinear Theory and its Applications (NOLTA2015), Hong Kong, December 1-4, 2015
6. Hideki Asai was General co-chair of the ITC-CSCC, June 2015, in Seoul.
7. Francis Lau was Technical Program Co-Chair at the International Symposium on Nonlinear Theory and its Applications (NOLTA), 1-4 Dec 2015, Hong Kong

8. Francis Lau was a member of the Organizing Committee responsible for Local Arrangements at the IEEE International Symposium on Information Theory (ISIT), 14-19 June 2015, Hong Kong
9. Wei Xing Zheng served as International Liaison and an Organizing Committee Member of the 3<sup>rd</sup> IEEE China Summit and International Conference on Signal and Information Processing (ChinaSIP'2015), Chengdu, China, July 2015
10. Wei Xing Zheng served as Local Arrangements Chair and an Organizing Committee Member of the 2015 IEEE Multi-Conference on Systems and Control (MSC'2015), Sydney, Australia, September 2015
11. Wei Xing Zheng serves as Invited Sessions Chair and an Organizing Committee Member of the 6<sup>th</sup> Australian Control Conference (AUCC'2016), Newcastle, Australia, November 2016
12. Wei Xing Zheng was International Program Committee Vice Chair and Conference Editor of the 14<sup>th</sup> IFAC Symposium on Large Scale Complex Systems: Theory and Applications (LSS'2016), Riverside, California, USA, May 2016
13. Wei Xing Zheng serves as Reginal Chairman and an Organizing Committee Member of the 35<sup>th</sup> Chinese Control Conference (CCC'2016), Chengdu, China, July 2016
14. Wei Xing Zheng serves as International Program Committee Co-Chair of the 12<sup>th</sup> World Congress on Intelligent Control and Automation (WCICA'2016), Guilin, China, June 2016
15. Xiang Li was Co-Chair for the Chinese Forum of Network Science 2016, April 2016, Tianjin
16. Ljiljana Trajkovic was General Co-Chair at the IEEE International Conference on Systems, Man, and Cybernetics, SMC 2016
17. Ljiljana Trajkovic was General Co-Chair, IEEE International Symposium on Ethics in Engineering, Science, and Technology, ETHICS 2016
18. Ljiljana Trajkovic was General Co-Chair, International Conference on Signal Processing and Integrated Networks, SPIN 2016
19. Ljiljana Trajkovic was General Chair, International WIE Conference on Electrical and Computer Engineering, WIECon-ECE 2015
20. Ljiljana Trajkovic was General Chair at the 3<sup>rd</sup> International Symposium on Women in Computing and Informatics, WCI 2015
21. Cem Göknaar was selected as Conference Chair for the forthcoming ICECS 2017.
22. Chai Wah Wu served and is serving as industry Liaison Chair in IEEE CNNA 2016
23. Chai Wah Wu was Industry Mentor at the University of Minnesota's IMA Mathematical Modeling Workshop 2015
24. Chai Wah Wu was selected as Industrial Liason Committee Member, for IEEE ISCAS 2018

## 4. Publications

This section collects the publications of those members of the Technical Committee that contributed to the survey leading to the present report. Given that only a fraction of the Committee members could provide detailed publication lists, this part of the report should be read with more focus on the qualitative aspects (namely, as representative of research directions), than quantitatively. In fact, the overall number of publications authored by the Committee members is expected to exceed by a non-negligible factor the already large quantity reported hereafter. Furthermore, for conference publications, only the most significant ones, with a clear focus on the Nonlinear Circuits and Systems area have been reported.

As a novelty with respect to the previous years reports, the bibliographic entries are coupled, as far as possible with their Digital Object Identifier (DOI). When reading this report in electronic form, the latter also works as a *clickable link* directly taking to the article abstract and full text at the publisher (often via IEEExplore).

### 4.1. Journal Publications

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- [J3] N. Ganganath, C. T. Cheng and C. K. Tse, “A Constraint-Aware Heuristic Path Planner for Finding Energy-Efficient Paths on Uneven Terrains” in IEEE Transactions on Industrial Informatics, vol. 11, no. 3, pages 601–611, June 2015. DOI: 10 . 1109 / TII . 2015 . 2413355
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Among the publications above, some have been marked by their respective authors for being particularly notable or relevant to the Technical Committee focus area. These include: entry [J1]; entry [J5] that appeared on *Nature*; entry [J29] that introduced a new model for open-loop compensation of hysteresis and creep, with applications to atomic force microscopes; entry [J41] that introduced a new and very efficient EMC simulation method; entry [J70] that introduced the new 4-port *Metamutator* capable of performing many functions including mutations when 1 or 2 or 3 of the ports are properly terminated; entry [J78] that proposed a new power-electronics circuit design method based on bifurcation analysis techniques.

## 4.2. Selected Conference Papers

The list provided in this subsection is not an exhaustive enumeration of all conference publications authored by the members of the Technical Committee, rather a set of items selected for being particularly representative of the technical committee focus area, or for being particularly innovative or otherwise important.

- [C1] M. Reit, M. Berens, W. Mathis “Ambiguities in Input-Output Behavior of Driven Nonlinear Systems Close to Bifurcation” Proc. of the 18<sup>th</sup> Intern. Symp. Theor. Electr. Eng. 2015 (ISTET’15), Kolobrzeg, Poland, June 7–10th, 2015
- [C2] D. Stahl, W. Mathis “Energy Transitions in Electrical Oscillators Studied by the Generalized Liouville Equation” Proc. of the 18<sup>th</sup> Intern. Symp. Theor. Electr. Eng. 2015 (ISTET’15), Kolobrzeg, Poland, June 7–10, 2015
- [C3] C. Widemann, H. Weber, S. Schatz, W. Mathis “A Comparison of the Volterra Series-based Nonlinear S-parameters and X-parameters” Proc. of the 22<sup>nd</sup> International Conference on Mixed Design of Integrated Circuits and Systems (MIXDES), June 25–27, 2015, Torun, Poland
- [C4] N. Ganganath, C. T. Cheng and C. K. Tse “An Improved Dynamic Z\* Algorithm for Rapid Replanning of Energy-Efficient Paths” Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC), 2015 International Conference on, Xi’an, 2015, pp. 395-398. DOI: 10.1109/CyberC.2015.52
- [C5] K. Y. Fok, N. Ganganath, C. T. Cheng and C. K. Tse “A Real-Time ASL Recognition System Using Leap Motion Sensors” Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC), 2015 International Conference on, Xi’an, 2015, pp. 411-414. DOI: 10.1109/CyberC.2015.81
- [C6] N. Ganganath, C. T. Cheng and C. K. Tse “Rapid replanning of energy-efficient paths for navigation on uneven terrains” 2015 IEEE 13<sup>th</sup> International Conference on Industrial Informatics (INDIN), Cambridge, 2015, pp. 408-413. DOI: 10.1109/INDIN.2015.7281769
- [C7] J. V. Wang, C. T. Cheng and C. K. Tse “A power and thermal-aware virtual machine allocation mechanism for Cloud data centers” 2015 IEEE International Conference on Communication Workshop (ICCW), London, 2015, pp. 2850-2855. DOI: 10.1109/ICCW.2015.7247611
- [C8] N. Ganganath, C. T. Cheng, C. K. Tse and X. Wang “Cluster-based informed agents selection for flocking with a virtual leader” 2015 IEEE International Symposium on Circuits and Systems (ISCAS), Lisbon, 2015, pp. 2692-2695. DOI: 10.1109/ISCAS.2015.7169241
- [C9] N. Ganganath, C. T. Cheng and C. K. Tse “Distributed anti-flocking control for mobile surveillance systems” 2015 IEEE International Symposium on Circuits and Systems (ISCAS), Lisbon, 2015, pp. 1726-1729. DOI: 10.1109/ISCAS.2015.7168986
- [C10] K. Y. Fok, C. T. Cheng and N. Ganganath “Live demonstration: A HMM-based real-time sign language recognition system with multiple depth sensors” 2015 IEEE International Symposium on Circuits and Systems (ISCAS), Lisbon, 2015, pp. 1904-1904. DOI: 10.1109/ISCAS.2015.7169037
- [C11] C. Psychalinos, G. Tsimokou and A. S. Elwakil “Digitally programmed fractional-order Chebyshev filter realizations using current-mirrors” Proc. IEEE Symposium on Circuits & Systems ISCAS’15, pp. 2337-2340, Portugal, May, 2015

- [C12] I. Dimeas, G. Tsimokou, C. Psychalinos and A. S. Elwakil “Realization of fractional-order capacitor and inductor emulators using current feedback operational amplifiers” Proc. Int. Symposium on Nonlinear Theory & Applications NOLTA’15, pp. 237-240, Hong Kong, Dec 2015
- [C13] M. Fouda, A. G. Radwan and A. S. Elwakil “Series and Parallel Circuit Models Containing Memristors and Inverse Memristors” Proc. IEEE Int. Conf. on Electronics, Circuits and Systems ICECS’15, pp. 292-295, Egypt, Dec. 2015
- [C14] M. E. Fouda, A. G. Radwan, A. S. Elwakil, N. K. Nawayseh “Review of the missing mechanical element: Memdamper” Proc. IEEE Int. Conf. on Electronics, Circuits and Systems ICECS’15, pp. 201-204, Egypt, Dec 2015
- [C15] E. Blokhina, D. O’Connell, D. Andrade-Miceli, S. Gorreta-Marine, J. Pons-Nin, M. Dominguez-Pumar, O. Feely and D. Galayko “Understanding complexity in multiphysics systems-on-a-chip: modern approaches for design” in Proc. of IEEE International Symposium on Circuits and Systems (ISCAS) 2015, 24-27 May 2015, Lisbon, Portugal.
- [C16] E. Koskin, D. Galayko, O. Feely and E. Blokhina “Mode-locking in a network of kuramoto-like oscillators”, In Proc. of IEEE International Joint Conference on Neural Networks (IJCNN) 2015, July 12-17, 2015 Killarney, Ireland.
- [C17] M. Biggio, F. Stellino, M. Parodi, M. Storace, “A Low-Complexity Circuit Model of Hysteresis” in Proceedings of the 2015 IEEE International Symposium on Circuits and Systems (ISCAS’2015), Lisbon, Portugal, May 24-27, 2015, pp. 1326-1329. DOI: 10.1109/ISCAS.2015.7168886
- [C18] G. De Campos, F. Della Rossa, and A. Colombo “Optimal and least restrictive supervisory control: safety verification methods for human-driven vehicles at traffic intersections”, IEEE Conference on Decision and Control, 2015.
- [C19] H. Ahn, A. Rizzi, A. Colombo, and D. Del Vecchio, “Experimental Testing of Semi-autonomous Multi-vehicle Control for Collision Avoidance at Intersections”, IEEE/RSS International Conference on Intelligent Robots and Systems, 2015.
- [C20] A. Colombo and H. Wymeersch, “Cooperative intersection collision avoidance in a constrained communication environment”, IEEE International Conference on Intelligent Transportation Systems, 2015.
- [C21] A. Colombo, “Numerically Efficient Robustness Test for Nonlinear Circuit Models”, International Symposium on Circuits and Systems, 2015.
- [C22] Minqi Du, W. K. S. Tang, Z. Y. Fan, “A performance study of China UHV power grid based on oscillator network”, NOLTA’2015, pp. 487-490, Hong Kong, Dec 2015.
- [C23] Y. Song, Z. Li, J. Niu, W. K. S. Tang and W. A. Halang, “Effect of the center frequency of chaotic signals on the EMI suppression in DC-DC converters with chaotic modulation”, NOLTA’2015, pp. 305-308, Hong Kong, Dec 2015.
- [C24] Z. Galias and B. Garda “Detection of all low-period windows for the logistic map”. In Proc. IEEE Int. Symposium on Circuits and Systems, ISCAS’15, pages 1698-1701, Lisbon, May 2015.
- [C25] Nina Zhou and Lipo Wang, “Processing Bio-Medical Data with Class-Dependent Feature Selection,” Italian Conference on Neural Networks, WIRN 2015.
- [C26] X. Hou, Y. Liu, O. Sourina, E. Tan, L. Wang, and W. Mueller-Wittig. “EEG based Stress Monitoring.” in Proceeding of the 2015 IEEE International Conference on Systems, Man, and Cybernetics (SMC2015), pp. 3110-3115, Oct 2015.

- [C27] Y. Liu, W. L. Lim, X. Hou, Olga Sourina, and L. Wang, "Prediction of Human Cognitive Abilities based on EEG Measurements", in Proceedings of 2015 International Conference on Cyberworlds (CW2015), pp. 161-164, Oct 2015.
- [C28] W. L. Lim, O. Sourina, and L. Wang, "MIND - An EEG Neurofeedback Multitasking Game", In Proc. 2015 Int. Conf. on Cyberworlds, pp. 169-172, 7-9 Oct 2015.
- [C29] Z. Lan, Y. Liu, O. Sourina, L. Wang, "Real-time EEG-based User's Valence Monitoring", in Proc. 2015 Int. Conf. Information, Communications and Signal Processing (ICICS 2015), pp. 1-5, Dec 2015.
- [C30] Aditya Mitra and L. P. Wang, "Improving Artificial Neural Network based Stock Forecasting using Fourier De-Noising and Hodrick-Prescott Filter", in Proc. 2015 Int. Conf. Information, Communications and Signal Processing (ICICS 2015), Dec 2015.
- [C31] W. L. Lim, O. Sourina, L. Wang, and Y. Liu, "EEG-based Mental Workload Recognition Related to Multitasking", in Proc. 2015 Int. Conf. Information, Communications and Signal Processing (ICICS 2015), Dec 2015, pp. 1-5.
- [C32] A. Przybyl, J. Szczypta, L. P. Wang, "Optimization of controller structure using evolutionary algorithm," L. Rutkowski, M. Korytkowski, R. Scherer, eds., 14<sup>th</sup> International Conference on Artificial Intelligence and Soft Computing (ICAISC 2015), Zakopane, POLAND, Jun 14-18, 2015, appeared in Artificial Intelligence and Soft Computing Pt. II, Lecture Notes in Computer Science, vol. 9120, pp. 261-271, 2015.
- [C33] Kaoru Nakagaki, Tadatashi Sekine, and Hideki Asai "Fast Transient Simulation of Power Distribution Network Based on Stabilized Explicit Method", APEMC, May 2015
- [C34] Kazuki Sakamoto, Tadatashi Sekine, and Hideki Asai "Comparison Between Latency Insertion Method (LIM) and Relaxation Method in Thermal Integrity Analysis", APEMC, May 2015
- [C35] Ikki Arakaki, Tadatashi Sekine, and Hideki Asai "Triangular Subcell Method for Efficient Equivalent Circuit Modeling of Power Delivery Network", ITC-CSCC, June 2015
- [C36] Mikio Hirata, Tadatashi Sekine, and Hideki Asai "Application of the Locally Implicit FVTD Method", APCAP, July 2015
- [C37] Tadatashi Sekine and Hideki Asai "Conformal Equivalent Circuit Model and Leapfrog Alternating Direction Implicit Formulation for Fast Simulation of Power Delivery Network", EMC Symp. & EMC Europe, Aug 2015.
- [C38] Tadatashi Sekine and Hideki Asai "A Stabilized Leapfrog Scheme for Circuit-Based Analysis of Power Delivery Network", EPEPS, Oct 2015
- [C39] Yuta Inoue and Hideki Asai "Acceleration of Large Electromagnetic Simulation Including Non-orthogonally Aligned Thin Structures by Using Multi-GPU HIE/C-FDTD Method", EDAPS, Dec 2015.
- [C40] Gajani, G. S., Boschetti, F., Negrini, D., Martellaccio, R., Milanese, G., Bizzarri, F., Brambilla, A. "A lumped model of lymphatic systems suitable for large scale simulations" (2015) 2015 European Conference on Circuit Theory and Design, ECCTD 2015, art. no. 7300034. DOI: 10.1109/ECCTD.2015.7300034
- [C41] Bizzarri, F., Brambilla, A., Codecasa, L. "Reduction of harmonic balance equations through Galerkin's method" (2015) 2015 European Conference on Circuit Theory and Design, ECCTD 2015, art. no. 7300089. DOI: 10.1109/ECCTD.2015.7300089

- [C42] Callegari, S., Bizzarri, F. "Teaching  $\Delta\Sigma$  modulators with PyDSM and scientific Python" (2015) Proceedings - IEEE International Symposium on Circuits and Systems, 2015-July, art. no. 7169005, pp. 1802-1805. DOI: 10.1109/ISCAS.2015.7169005
- [C43] Callegari, S., Bizzarri, F., Brambilla, A. "Optimal quantization noise management in wideband fractional-N PLLs" (2015) Proceedings - IEEE International Symposium on Circuits and Systems, 2015-July, art. no. 7168695, pp. 561-564. DOI: 10.1109/ISCAS.2015.7168695
- [C44] Karakaya B., Yeniceri R. and Yalcin M. E. "Wave Computer Core Using Fixed-Point Arithmetic," Proc. of Circuits and Systems (ISCAS), 2015 IEEE International Symposium on, pp. 1514-1517, Lisbon, Portugal, May 24-27, 2015. DOI: 10.1109/10.1109/ISCAS.2015.7168933
- [C45] Abtioglu E., Yeniçeri R., Yalçın M. E., "Cellular Network of Networks on Dynamically Partial Reconfigurable FPGA," 22<sup>nd</sup> European Conference on Circuit Theory and Design (ECCTD2015), Trondheim, Norway, August 24-26, 2015. DOI: 10.1109/ECCTD.2015.7300002.
- [C46] Yeniceri R., Yalcin M. E., "Anticipating Synchronization Between Sampled-Time Master And Discrete-Time Slave Chaotic Systems", 7<sup>th</sup> International Scientific Conference on Physics and Control (PhysCon 2015), Istanbul, Turkey, August 19-22, 2015.
- [C47] Goncu E., Kocdogan A., Yalcin M. E., "A New Random Number Generator with A New Cellular Automata Model," 7<sup>th</sup> International Scientific Conference on Physics and Control (PhysCon 2015), Istanbul, Turkey, August 19-22, 2015.
- [C48] X. Nie, W. X. Zheng and J. Lu, "Stability analysis of multiple equilibria for recurrent neural networks with discontinuous Mexican-hat-type activation function", Proc. 48<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2015), pp. 569-572, Lisbon, Portugal, May 2015.
- [C49] Y. Xia and W. X. Zheng, "On unbiased identification of autoregressive signals with noisy measurements", Proc. 48<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2015), pp. 2157-2160, Lisbon, Portugal, May 2015.
- [C50] Y. Wei and W. X. Zheng, "An efficient method for control of continuous-time systems subject to input saturation and external disturbance", Proc. 48<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2015), pp. 3068-3071, Lisbon, Portugal, May 2015.
- [C51] S. Ding and W. X. Zheng, "Some results on design of second-order sliding mode controller for nonlinear systems", Proc. 48<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2015), pp. 3072-3075, Lisbon, Portugal, May 2015.
- [C52] W. Xiong and W. X. Zheng, "A new approach to finite-time tracking of coupled continuous networks", Proc. 48<sup>th</sup> IEEE International Symposium on Circuits and Systems (ISCAS'2015), pp. 3076-3079, Lisbon, Portugal, May 2015.
- [C53] Yingxian Lu, Francesco Cottone, Sébastien Boisseau, Frédéric Marty, Dimtiri Galayko and Philippe Basset "Low-frequency and ultra-wideband MEMS electrostatic vibration energy harvester powering an autonomous wireless temperature sensor node", IEEE MEMS Conference, Shanghai, China, January 2016
- [C54] Yingxian Lu, Francesco Cottone, Sébastien Boisseau, Dimitri Galayko, Frédéric Marty, Philippe Basset "Low-Frequency MEMS Electrostatic Vibration Energy Harvester With Corona-Charged Vertical Electrets and Nonlinear Stoppers", in PowerMEMS 2015 conference proceeding, Boston, MA, USA, December 2015



- [C55] Armine Karami, Philippe Basset, Dimitri Galayko “Electrostatic vibration energy harvester using an electret-charged MEMS transducer with an unstable auto-synchronous conditioning circuit”, in PowerMEMS 2015 conference proceeding, Boston, MA, USA, December 2015
- [C56] C. Shan, E. Zianbetov, D. Galayko, F. Anceau, Olivier Billoint, and D. Galayko “A distributed synchronization of all-digital PLLs network for clock generation in synchronous SOCs”, in NewCAS 2015 conference, Grenoble, France, June 2015.
- [C57] J. B. Wang, Xiang Li, L. Wang, “Inferring spatial transmission of epidemics in networked metapopulations”, IEEE Int. Symposium on Circuits and Systems (ISCAS 2015), Madrid, pp. 906-909.
- [C58] J. Y. Zhan, Xiang Li, “Asynchronous consensus of second-order multi-agent systems with aperiodic sampled-data”, IEEE Int. Symposium on Circuits and Systems (ISCAS 2015), Madrid, pp. 902-905.
- [C59] C. Y. Gao, Q. Yuan, H. L. Shang, Xiang Li, “Design and implementation of a quadrotor for indoor swarm research”, Proceedings of 2015 Chinese Automation Congress, pp. 390-394.
- [C60] Q. Yuan, H. L. Shang, J. Y. Zhan, Xiang Li, “Towards realizing a multiple vehicle coordination system”, Proceedings of 2015 Chinese Automation Congress, pp. 1040-1045.
- [C61] J. Y. Zhan, Xiang Li, “Consensus of Multiple Double-integrators With Aperiodic Sampled-data and Switching Topology”, Proceedings of the 34<sup>th</sup> Chinese Control Conference, 2015, pp. 7113-7117.
- [C62] M. Zhou, J. Y. Zhan, Xiang Li, “Cluster Consensus in Networks of Agents With Weighted Cooperative-Competitive Interactions Via Nonlinear Protocols”, Proceedings of the 34<sup>th</sup> Chinese Control Conference 2015, pp. 7108-7112.
- [C63] S. Haeri, R. Gill, M. Hay, T. Wong, and Lj. Trajkovic, “Multihoming with Locator/ID Separation Protocol: an experimental testbed,” in Proc. The 7<sup>th</sup> IEEE/IFIP International Workshop on Management of the Future Internet, Ottawa, ON, Canada, May 2015, pp. 1238-1241.
- [C64] Callegari, S., “Evaluation of a couple of true random number generators with liberally licensed hardware, firmware, and drivers” in 2015 IEEE International Conference on Electronics, Circuits, and Systems, Dec 2015, pp. 197-200. DOI: 10.1109/ICECS.2015.7440282
- [C65] N. Herencsar, J. Jerabek, J. Koton, K. Vrba, S. Minaei and I. C. Gökna, “Pole frequency and pass-band gain tunable novel fully-differential current-mode all-pass filter,” 2015 IEEE International Symposium on Circuits and Systems (ISCAS), Lisbon, 2015, pp. 2668-2671. DOI: 10.1109/ISCAS.2015.7169235
- [C66] N. Herencsar, J. Koton, K. Vrba, S. Minaei and I. C. Gökna, “Voltage-mode all-pass filter passive scheme based on floating negative resistor and grounded capacitor,” Circuit Theory and Design (ECCTD), 2015 European Conference on, Trondheim, 2015, pp. 1-4. DOI: 10.1109/ECCTD.2015.7300056
- [C67] M. Yıldı, C. Gökna and S. Minaei, “MOS only oscillator using adder and subtractor circuits,” 2015 9<sup>th</sup> International Conference on Electrical and Electronics Engineering (ELECO), Bursa, 2015, pp. 33-36. DOI: 10.1109/ELECO.2015.7394618
- [C68] Y. Lu, M. S. Squillante, C. W. Wu and B. Zhang, “On the Control of Epidemic-Like Stochastic Processes with Time-Varying Behavior,” ACM SIGMETRICS Performance Evaluation Review, vol. 43, no. 2, pp. 78-80, 2015.

- [C69] M. P. Kennedy, H. Mo, Z. Li, G. Hu, P. Scognamiglio and E. Napoli, “The Noise and Spur Delusion in Fractional-N Frequency Synthesizer Design”, in Proc. ISCAS 2015, Lisbon, 24-27 May 2015.
- [C70] M. P. Kennedy, H. Mo and G. Hu, “Comparison of a feed-forward phase domain model and a time domain behavioral model for predicting mismatch-related noise floor and spurs in fractional-N frequency synthesizers”, in Proc. ISSC 2015, pages 1-6, Carlow, 24-25 June 2015
- [C71] M. P. Kennedy, H. Mo and Y. Donnelly, “Phase Noise and Spur Performance Limits for Fractional-N Frequency Synthesizers”, in Proc. ISSC 2015, pages 1-6, Carlow, 24-25 June 2015.
- [C72] H. Mo and M. P. Kennedy, “Effective (Spur-Free) Dithering of Digital Delta-Sigma Modulators with Pseudorandom Dither”, in Proc. ECCTD 2015, pages 1-6, Trondheim, 24-26 August 2015.
- [C73] M. P. Kennedy, H. Mo, Z. Huang and J. P. Lana, “A Method to Quantify the Dependence of Spur Heights on Offset Current in a CP-PLL”, in Proc. ISCAS 2016 Montreal, 22-25 May 2016.
- [C74] V. Marotta, G. Macera, M. P. Kennedy and E. Napoli, “Comparative Analysis of Differential Colpitts and Cross-Coupled VCOs in 180nm Si-Ge HBT” in Proc. ISCAS 2016 Montreal, 22-25 May 2016.
- [C75] H. Mo, G. Hu and M. P. Kennedy, “Comparison of analytical predictions of the noise floor due to static charge pump mismatch in fractional-N frequency synthesizers”, in Proc. ISCAS 2016, Montreal, 22-25 May 2016.
- [C76] B. Jayaram, S. Arumugam and K. Thulasiraman, “Independent Dominant Sequence in Bipartite Graphs”, Procedia Conference, Indonesia, Elsevier Publishing Company, December 2015.
- [C77] Yadav Mamta and K. Thulasiraman, “Network Science Meets Circuit Theory: Kirchhoff Index of a graph and the Power of Node to Datum Resistance Matrix”, IEEE International Symposium on Circuits and Systems, (ISCAS), May 2015.
- [C78] Zhili Zhou, Tachun Lin, Krishnaiyan Thulasiraman, “Survivable Cloud Network Mapping with Multiple Failures”, IEEE International Conference on Communications (ICC), June 2015.

Among the publications above, some entries have been marked by their respective authors as being particularly notable or relevant to the Technical Committee focus area. These include: [C15] that was the opening paper of the special session on “Complexity in SoCs” at ISCAS 2015 and [C56] that is an invited contribution.

#### 4.3. Authored Books

- [B1] P. Basset, E. Blokhina and D. Galayko “Electrostatic Kinetic Energy Harvesting”, ISTE-Wiley, 2016
- [B2] Xiuming Yao, Ligang Wu and Wei Xing Zheng, “Filtering and Control of Stochastic Jump Hybrid Systems” Springer, Berlin, 2016.

#### 4.4. Edited Books

- [EB1] Lu, J., Yu, X., Chen, G., Yu, W. eds., “Complex Systems and Networks — Dynamics, Controls and Applications”, Springer, *Understanding Complex Systems* series, 2016. DOI: 10.1007/978-3-662-47824-0.
- [EB2] Krishnaiyan K. T. Thulasiraman (Editor in Chief), S. Arumugam, Andreas Brandstaedt, and Takao Nishizxeki, “Handbook of Graph Theory, Combinatorial Optimization and Algorithms” CRC Press, 2016.
- [EB3] Elena Blokhina, Dimitri Galayko, Abdelali El Aroudi, Eduard Alarcon, eds, “Nonlinear vibrational energy harvesting systems for micro- and nanoscale applications”, Springer, in press

#### 4.5. Book Chapters

- [BC1] Xiang Li, P. Yao, Y. J. Pan, “Towards structural controllability of temporal complex networks”, in *Complex Systems and Networks: Dynamics, Controls, and Applications*, Springer-Verlag, 2015, pp. 341-371.
- [BC2] Xiang Li, Y. Q. Zhang, A. V. Vasilakos, “Discovering and Predicting Temporal Patterns of WiFi-Interactive Social Populations”, in *Opportunistic Mobile Social Networks*, CRC Press, 2015, pp. 99-122.
- [BC3] S. Haeri and Lj. Trajkovic, “Deflection routing in complex networks,” in *Complex Systems and Networks*, J. Lu, X. Yu, G. Chen, and W. Yu, Eds., Berlin: Springer, pp. 395-422, 2015.
- [BC4] Hiroo Sekiya, “Throughput and delay analysis for IEEE 802.11 multi-hop networks” in “Lecture of Information Network Science” (in Japanese), Corona-sha, Sept. 2015
- [BC5] A. El Aroudi, M. Al-Numay, K. Al Hosani and N. Al Sayari, “Using Steady-State Response for Predicting Stability Boundaries in Switched Systems Under PWM with Linear and Bilinear Plants” in *Structural Nonlinear Dynamics and Diagnosis*, pp. 367-391, Springer, 2015.

#### 5. Patents

- [P1] Kartheek Chandu, Mikel Stanich, Chai Wah Wu, and Barry M. Trager, US patent 9,036,212, “Halftone screen generation mechanism” issued on May 19, 2015 to Ricoh Production Print Solutions LLC
- [P2] Soumyadip Ghosh, Dung Phan, Mayank Sharma, Chai Wah Wu, and Jinjun Xiong, US Patent 9,260,031, “Distributed charging of electrical assets” issued Feb 16, 2016 to International Business Machines Corporation

#### 6. Awards and Honors

1. Hideki Asai received the “STARC collaboration Award” for the development of the ultra-fast SI/PI/EMI simulation methods in the framework of a project with STARC (Semiconductor Technology Academic Research Center).
2. Wei Xing Zheng was honoured as a Thomson Reuters Highly Cited Researcher in Engineering by Thomson Reuters in September 2015.
3. Xiang Li Received the Advisor Award of Shanghai excellent PhD dissertation from Shanghai MEC in 2015

4. Xiang Li Received the 2015 Young Scientist Award from Chinese Association of Automation
5. Xiang Li Received the 2015 National Natural Science Award (2<sup>nd</sup> class) of China
6. Xiang Li Received the 2015 Highly Cited Chinese Research of Electric and Electronic Engineering from Elsevier
7. Xiang Li Received the Creative Leadership of Science and Technology from Ministry of Science and Technology, China, in 2016
8. Ljiljana Trajkovic was welcome in IEEE-Eta Kappa Nu as a Professional inductee, Eta Chapter, in recognition of contributions to IEEE and the IEEE fields of interest, in November 21, 2015
9. Ljiljana Trajkovic received the 2015 IEEE Canada E. F. Glass Western Canada Merit Award on May 4, 2015: For exemplary and long service to the Vancouver Section and Chapters.
10. Michael Peter Kennedy was elected to membership of the Academia Europaea.

## 7. Other services in the IEEE

As every year, also in 2015–2016, some members of the Technical Committee received explicit recognition for their standing in research or for their service activities.

1. Elena Blokhina was a member of the Circuits and Systems Society Board of Governors.
2. Elena Blokhina was a representative from the Circuits and Systems Society in the in the IEEE Young Professionals Committee, during 2015.
3. Mustak Erhan Yalcin was Chair of the IEEE Circuits and Systems Society Cellular Nanoscale Networks and Array Computing Technical Committee.
4. Wei Xing Zheng served and is currently serving on the International Steering Committee of the IEEE Asia Pacific Conference on Circuits and Systems (APCCAS).
5. Ljiljana Trajkovic was President of the IEEE Systems, Man, and Cybernetics Society in the framework of a 2014-2015 appointment
6. Ljiljana Trajkovic was a member of the IEEE Communications Society Awards Committee in the framework of a 2013-2015 appointment
7. Ljiljana Trajkovic was a member of the Circuits and Systems Society Meritorious Service Award Subcommittee with appointment in 2014 and in 2015
8. Ljiljana Trajkovic was a member of the NSERC Strategic Projects Selection Panel, Information and Communications Technologies, in the framework of a 2013-2015 appointment
9. Ljiljana Trajkovic was Chair of the IEEE Circuits and Systems Society joint Chapter of the Vancouver/Victoria Sections, with a term started in 2001.
10. Cem Göknar was an organizer for the “PROJISTOR 2015, Student Projects’ Contest”, an IEEE CASS Outreach Project, organized with the Dogus IEEE Student Branch.
11. Chai Wah Wu served as a Program Evaluator (PEV) for Computer Engineering for the IEEE Engineering Accreditation Commission (EAC) in the Accreditation Board for Engineering and Technology (ABET) programs.

12. Chai Wah Wu served as an alternate member in the IEEE Committee on Engineering Accreditation Activities (CEAA) that is responsible for implementing IEEE involvement in the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) Inc., the accrediting agency for engineering programs in the United States.
13. Chai Wah Wu was a reviewer for the IEEE CAS Society Fellow applications
14. Hiroo Sekiya was Secretary of the IEEE CASS Japan Joint Chapter with a term started in Jan 2016.
15. Abdelali El Aroudi was Chair Elect of the PECAS Technical committee.

## 8. Other professional service

1. Mustak Erhan Yalcin was President of the Istanbul Technical University Advanced Electronic Technologies Foundation (ITU-ETA Foundation)
2. Wei Xing Zheng served and is currently serving on the Steering Committee of the Australian Control Conference (AUCC).

## 9. Media and Popular Press

- [M1] Lj. Trajkovic, "In Memoriam, Mirko Milic", and "In Memoriam, Radoslav Horvat," in A Brief History of Circuits and Systems, F. Maloberti and A. C. Davies, Eds., IEEE Circuits and Systems Society.

## 10. Highlights on cooperation within the Technical Committee and with other TCs

It is worth underlining that many of the achievements listed in Part I have been made possible, or otherwise favored, supported, and accelerated by the collaborative environment provided by the Committee itself and/or through the cooperation with other Technical Committees working on nearby areas. Some highlights in this sense are provided by the following points:

1. While Lipo Wang was Organizing Committee Co-Chair for the 2015 11<sup>th</sup> International Conference on Natural Computation (ICNC 2015) & 2015 12th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD 2015), 15-17 August 2015, Zhangjiajie, China, the IEEE Circuits and Systems Society acted as a Technical Co-Sponsor. Many members of the NCAS-TC, and many members of the Neural Systems and Applications Technical Committee (NAS) served on the Technical Program Committee of the Conference. The same is going to happen with the forthcoming ICNC-FSKD 2016, which also includes some members of the Biomedical Circuits and Systems Technical Committee (BioCAS) in its TPC.
2. Many members of the NCAS-TC are also members of other Technical Committees within CASS, so fostering inter-area cooperation. Notably, Mustak Erhan Yalcin was Chair of IEEE CASS Cellular Nanoscale Networks and Array Computing Technical Committee. Furthermore, Wei Xing Zheng is also a Member of IEEE CAS Society's TC on Digital Signal Processing and a Member of IEEE CAS Society's TC on Neural Systems and Applications. At ISCAS 2015 and 2016 he had papers not only in the Nonlinear Circuits and Systems Track but also in the Digital Signal Processing Track and the Neural Systems Track. Sergio Collegari is also a member of the Circuits and

Systems Education and Outreach TC, which lead to a conference publication with topics both in the area of Nonlinear Circuits and Systems and in the area of education.

3. The NCAS-TC represented a forum to share ideas, many of them resulted in joint publications or in the proposal of Special Issues. For instance, Wei Xing Zheng and Jinhu Lu have a joint paper to be presented under the NCAS Track at ISCAS'2016. Similarly, Dimitri Galayko and Elena Blokhina had a strong cooperation within the Technical Committee that lead to several publications and the organization of a tutorial. The same happened for publications by Sergio Callegari and Federico Bizzarri. Finally, one JETCAS special Issue was born out of the cooperation of 4 TC members, namely Hebert lu, Damian Giaouris, Abdelali El Aroudi, and Ian Hiskens.

Part II.

## Summary of significant events in the Technical Committee

### 11. Membership changes

Several membership changes occurred through the year<sup>1</sup>, including:

- Bharathwaj Muthuswamy resigned from the TC because of changed professional activities;
- Federico Bizzarri was accepted as a new member of the TC;
- Gabriele Manganaro resigned from the TC following a shift in his research interests;
- Guoliang (Larry) Xue resigned from the TC following a shift in his research interests;
- Chi Tsun (Ben) Cheng was accepted as a new member of the TC (pending ratification at the ISCAS 2016 meeting);
- Shujun Li resigned from the TC following a shift in his research interests.

An up to date members' roster is constantly available on a dedicated page in the Technical Committee website.

### 12. Revision of the Technical Committee Bylaws

Following solicitation from CASS, that provided a uniform set of rules for the operation of Technical Committees, the NCAS-TC started a revision of its Bylaws.

A working group has been setup to ease the drafting of a new Charter. The group is formed by a subset of the Technical Committee Officers and two experts, consisting of past Technical Committee Chair that have previously worked on either the original writing or the update of the Bylaws. The working group purpose is to prepare the initial documents and proposals for opening discussion with the members and acting as a front end to the members wishing to get more information on specific points or have assistance in the finalization of proposals and motions on specific items of the new Charter. Such assistance consists of helping the formalization of proposals and assuring that they do not conflict with the constraints set by CASS and they do not hinder the internal consistency of the new Charter.

The working group is currently composed by:

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<sup>1</sup>The activities of those who left the Committee through the year have not been recorded in this report.

- Sergio Callegari (current TC Chair)
- Herbert Lu (current TC Chair Elect)
- Elena Blokhina (current TC Secretary)
- Jinhu Lu (current Past Chair)
- Francis Lau (expert who recently served as TC Chair and started a survey of the TC practices in view of a Bylaws revision)
- Ljiljana Trajkovic (expert who served as TC Chair in the past and played a major role in the redaction of the original TC Bylaws)

The group can be reached by a dedicated email address (`ncas-tc-charterteam@listserv.ieee.org`).

### 13. Management and operation of the Technical Committee

The year under report was characterized by a renovation of the Technical Committee Officers occurred out of the Committee meeting at ISCAS 2015. This followed difficulties in arranging the appointment of the TC charges during the meeting due to a lack of time. Consequently, the 2014-2015 Officers remained in charge *ad interim* through the Summer of 2015, until Jinhu Lu stepped down at the end of Aug 2015, with Sergio Callegari shifting from *Chair Elect* into the *TC Chair* position. On Sep 18, 2015, Xiang Li and Fernando Corinto were appointed as Track Chairs for the Nonlinear Circuits and Systems Track at ISCAS 2016<sup>2</sup>, through an electronic ballot arranged with the assistance of the CASS Office. On Nov 17, 2015, Herbert Lu was appointed as the new *Chair Elect*, and Elena Blokhina was appointed as the new *Secretary*, again through an electronic ballot arranged with the help of the CASS Office.

It is also worth reporting that, in view of the Bylaws revision mentioned in the previous section (and to anticipate its conformance with the new framework that CASS is setting for its Technical Committees), the NCAS-TC approved a few changes in its leadership structure and management practices through the year under report. Significantly, on Oct 21, 2015 there was an online meeting on a CASS videoconferencing platform, to discuss the matter and on Nov 13 the results of an online vote were announced as summarized in the following points:

- the Technical Committee *Chair*, *Chair Elect* and *Secretary* terms were extended to two years;
- the Technical Committee *Past Chair* was eliminated as an Officer position, to begin from ISCAS'16.
- the ISCAS *Track Chair* was eliminated as an Officer position.

As evident from the previous points, during the year under report the Committee management started to take advantage of tools made available by CASS, including: a conferencing platform to organize virtual meetings (one such meeting was held in Oct 2015, precisely to sort out the convergence towards the new CASS requirements for Technical Committees) and an electronic voting platform.

The minutes of the Oct 2015 online meeting are available on the dedicated page of the Committee web site, together with those of the ISCAS 2015 meeting, both pending approval (expected at the ISCAS 2016 meeting). Full reports on the online votes are available from the CASS Office and shall also appear on the Committee website soon.

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<sup>2</sup>Up to ISCAS 2016, the NCAS-TC included the ISCAS Track Chairs in its Officers group.

For the near future, it is expected that the NCAS-TC will increasingly take advantage of electronic meeting and voting tools, to favor a uniform spreading of its activities through the whole year.

## 14. Writing of document and reports

Through the year, the Technical Committee produced a few documents and reports with the aim of helping the organization of conferences and policy making at the CASS level. In many cases these documents have been prepared after solicitation or discussion with the Technical Activities Vice-Presidency. CASS. They comprise:

1. A proposal of a revised sub-track structure to be adopted in conferences providing a Track on Nonlinear Circuits and Systems and Circuit Theory. The novel sub-track structure was devised in cooperation with Pamela Abshire, who is a member of the CASS Board of Governors Conference Division and organizer of ISCAS'17.
2. A report about the interactions between the NCAS-TC and other Technical Committees within CASS. The report was built from a survey conducted among the Committee members and structured as an interaction matrix aimed at favoring cooperation, identifying contact points for exchanges and producing better synergy between the TCs.
3. A contribution to the book "A Short History of Circuits and Systems", a CASS publication and joint effort written under the coordination of the Society President. The contribution refers to the last part of the book, dedicated to emerging fields and technical vision and included a few notes on the motivation and role of the Technical Committee as well as its interpretation of future challenges and strategic focus areas.

## 15. Endorsements

The Committee practiced evaluation and endorsement of initiatives, including conferences and candidacies to positions and editorial roles.

After a thorough discussion among its members,

- the NCAS-TC endorsed the candidacy of Xiang Li and Herbert Lu for the Senior Editorial Board of the Journal on Emerging and Selected Topics in Circuits and Systems. Herbert Lu was eventually appointed in the Board.
- the NCAS-TC endorsed the candidacy of Mario di Bernardo for the CASS Distinguished Lecturer Program (DLP). Mario di Bernardo was eventually included in the DLP roster.

Furthermore, the Committee Officers made a thorough evaluation of the International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD 2016) application for IEEE CASS Technical Co-Sponsorship and decided to endorse it. In this case, time constraints limited the discussion with the Committee members. The final CASS decision about the allowance of this technical Co-Sponsorship is not yet known at the time of writing this report.



Part III.

## Management of Tracks dedicated to Nonlinear Circuits and Systems at International Conferences

### 16. Nonlinear Circuits and Systems Track at ISCAS 2016

The Nonlinear Circuits and Systems Track had 84 submissions, which makes a -13% change with respect to the previous year.

The Nonlinear Circuits and Systems Track ranks 9<sup>th</sup> among the 17 ISCAS tracks.

The Review Committee for the track involved 27 experts, including 26 members of the NCAS-TC. They did a remarkable job in assuring that high quality and timely reviews were available to assist the manuscript selection process. The Review Committee Members worked under the constant coordination of Xiang Li and Fernando Corinto who served as the Track Chairs. A total of 332 reviewers were assigned, with an average of 4 reviewers per paper and 3.4 sets of comments returned per paper.

After the review process, 38 contributions were accepted, with an acceptance ratio at 45%. The papers were organized in 5 lecture sessions and 2 poster sessions. Fourteen members from the TC volunteered to serve as session chairs for these sessions.

The presentations and posters were organized along 10 subtracks, namely:

- 8.1 Oscillators and Phase-locked Loops
- 8.2 Complex Networks Analysis and Applications
- 8.3 Chaos, Bifurcation & Applications
- 8.4 Modeling and Simulation of Nonlinear Circuits
- 8.5 Applications of Nonlinear Dynamics to Communication & Signal Processing
- 8.6 Analysis, Implementation & Application of Nonlinear Circuits
- 8.7 Nonlinear Signal Processing
- 8.8 Nonlinear and Networked Control
- 8.9 Graph Theory and Applications to Computing, Circuits and Systems
- 8.10 Other Areas in Nonlinear Circuits and Systems

Detailed statistics on the submission among different sub-tracks are listed in Table 1. It is worth recalling that the Sub-Track structure is going to undergo refactoring for ISCAS 2017.

### 17. Other IEEE Conferences involving a Nonlinear Circuits and Systems Track

In recent years, the IEEE International Conference on Electronics, Circuits, and Systems (ICECS) has always been organized along tracks with one of them directly related to the nonlinear circuits and systems area (possibly in conjunction with some other nearby topic). Particularly close contacts exist between the organizers of this important regional conference and the NCAS-TC and exchanges exist for the selection of the Track Chair(s), to assure that Committee members can be involved. The 2015 edition was no exception with Yoshifumi Nishio and Mustak Yalçın getting in charge of a Nonlinear Circuits and Systems and Neural Networks track. Similarly, an exchange is in progress for the choice of the Track Chairs at the Nonlinear and Linear circuits and systems Track and the Neural Networks Track.

Table 1: Paper counts and decisions by sub-track for manuscripts in the Nonlinear Circuits and Systems Track

Topic	All Papers	All Accepted Papers	Accepted Lecture Papers	Accepted Poster Papers	Rejected Papers	Withdrawn Papers	Papers With No Decision
8.0	0	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
8.1	33	10 30%	6 18%	4 12%	22 67%	1 3%	0 0%
8.2	9	6 67%	4 44%	2 22%	3 33%	0 0%	0 0%
8.3	8	2 25%	2 25%	0 0%	6 75%	0 0%	0 0%
8.4	8	5 63%	4 50%	1 13%	3 38%	0 0%	0 0%
8.5	4	2 50%	2 50%	0 0%	2 50%	0 0%	0 0%
8.6	4	4 100%	2 50%	2 50%	0 0%	0 0%	0 0%
8.7	3	1 33%	0 0%	1 33%	2 67%	0 0%	0 0%
8.8	5	2 40%	2 40%	0 0%	2 40%	1 20%	0 0%
8.9	2	2 100%	1 50%	1 50%	0 0%	0 0%	0 0%
8.10	8	4 50%	1 13%	3 38%	3 38%	1 13%	0 0%
<b>Total</b>	<b>84</b>	<b>38</b> <b>45%</b>	<b>24</b> <b>29%</b>	<b>14</b> <b>17%</b>	<b>43</b> <b>51%</b>	<b>3</b> <b>4%</b>	<b>0</b> <b>0%</b>