



Circuits and Systems  
Society

## **Annual Report of the Power and Energy Circuits and Systems (PECAS) Technical Committee 2013/2014**

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### **Introduction**

This report of the Power and Energy Circuits and Systems (PECAS) Technical Committee of the IEEE CAS details activities of the committee and its members of the past year. The number of active committee members is 74. They have been involved in a large number of various activities advancing and promoting the field of PECAS.

The TC has been endorsing and encouraging its members to organize special sessions and participating in the many opportunities that CAS offers. This year we had an expressive number of special sessions organized in several conferences, a proposal submitted to JETCAS and a member of PECAS, Dr, Tsorng-Juu (Peter) Liang, Director of the Dept. of Electrical Engineering, Green Energy Electronics Research Center (GREERC), National Cheng-Kung University, Tainan, Taiwan, chosen as a Distinguished Lecture of the IEEE Circuits and Systems Society for the term 2014-2015 with the support of the PECAS TC.

Along this year, officers have also discussed a proposal of small adjustments in the bylaws in the section membership. This proposal will be discussed and voted in the PECAS TC meeting during ISCAS 2014.

Although members have been very active during this year, PECAS TC recognizes the need to promote a better coordination and cooperation among our members with the aim of taking advantage of the several opportunities that CAS offers to promote the field of PECAS.

In the next sessions, more detailed information about PECAS TC activities are given.

### **1. IEEE ISCAS 2013**

In this section, a brief report with submission numbers and acceptance rate of papers that were submitted to ISCAS 2014 and handled by PECAS TC is presented. The organization of these papers into sessions is also briefly discussed. It also brings information about the special sessions that were organized by PECAS TC members.

The PECAS-TC chair, Luis F. C. Alberto, and the PECAS-TC past chair, Hirotaka Koizumi, shared the task of ISCAS 2014 Track Chairs with the help of 21 RCMs. The total number of regular papers submitted to ISCAS 2014 under the scope of PECAS TC was 86, representing an increase of about 12% as compared to submissions of

ISCAS 2013. Out of them, there were 42 accepted papers, which resulted in an acceptance rate of 48.8%. The 42 accepted regular papers were organized into 6 Lecture Sessions and 3 Poster Sessions. The title of sessions held at 2013 ISCAS are:

Oral Sessions:

- Power Converter Circuits
- Integrated Power Circuits and Systems
- Circuits and Systems for Energy Harvesting
- Modeling, Dynamics and Control of Power Converters
- Stability Analysis of Power Systems and Microgrids
- Smart Grids, Modeling and Power Converters

Poster Sessions:

- Power Converters and Wireless Power Transfer
- Power Management, Modeling and Control

PECAS TC has also endorsed the proposal of Special Sessions and 3 were approved under the scope of PECAS TC. This year we have a Special Session that was organized in collaboration with Nonlinear Circuits and Systems TC.

Special Sessions:

- Applications of Advanced Nonlinear Theory to Smart Grids (Organizers: Chia-Chi Chu and Luis F. C. Alberto)
- Nonlinearities in Energy Harvesting Systems: Analysis and Applications (Organizers: Abdelali El Aroudi and Elena Blokhina )
- Circuitual Aspects of Emergent Application of Wireless Power Transfer Systems (Organizers: Eduard Alarcon and Patrick Hu)

## **2. Publications**

Members have reported an expressive number of publications. The secretary, Abdelali El Aroudi, requested statistics of papers submitted to the editor in chief of TCAS, who reported that these statistics are not collected.

## **3. Editorial Services**

Members of PECAS TC have been working as associate editors of several journals in the field:

1. Wing-Kuen Ling: Associate editor of the Journal of the Franklin Institute (Elsevier) 2013-2014
2. Wing-Kuen Ling: Associate editor of the Circuits, Systems and Signal Processing (Springer) 2008-2015

3. Wing-Kuen Ling: Associate editor of the International Journal of Bifurcation and Chaos (World Scientific) 2012-2014
4. Wing-Kuen Ling: Associate editor of the American Journal of Engineering and Applied Sciences (Science Publications) 2012-2013
5. Wing-Kuen Ling: Associate editor of the International Journal of Engineering and Emerging Technologies (International Publication Agency for Electronic Journals) 2012-2014
6. Wing-Kuen Ling: Associate editor of the International Journal of Applied Mathematics and Modeling (Kindi Publication) 2013-2015
7. Wing-Kuen Ling: Associate editor of the Open Journal Advanced Engineering Techniques (Kindi Publication) 2013-2015
8. Abdelali El Aroudi: Associate Editor of Modelling and Simulation in Engineering
9. Abdelali El Aroudi: Associate Editor of Journal of advanced computing
10. Abdelali El Aroudi: Associate Editor of International Journal of Advanced Electrical Engineering IJAEE
11. Abdelali El Aroudi: Associate Editor of Technical Transactions on Automatic Control
12. Abdelali El Aroudi: Associate Editor of IEE IET Power Electronics
13. Tsorng-Juu (Peter) Liang: Associate editor of the IEEE Transactions on Power Electronics
14. Tsorng-Juu (Peter) Liang: Associate editor of the IEEE Journal of Emerging and Selected Topics in Power Electronics
15. Tsorng-Juu (Peter) Liang: International Advisory Board Member of the International Journal of Energy and Power Engineering Research
16. E. Alarcon, Editorial Board member for the Journal of Low Power Electronics (JOLPE) (2011-to date).

## **5. Special issues edited**

1. Wing-Kuen Ling: Guest Editor in Chief, Special Issue on Advances in Computing Technology and Application in International Journal of Digital Content Technology and Its Applications (The International Association for Information, Culture, Human and Industry Technology) 2013
2. Wing-Kuen Ling: Guest Editor in Chief, Special Issue on Algorithms for Communications Systems in Mediterranean Journal of Electronics and Communications (SoftMotor Limited) 2013

### 3. Books written/edited by members

1. Silvano Vergura is the Editor of the book *Renewable Energy*, which is under production with Cambridge Scholar Publishing, UK
2. The book "Stability Region of Nonlinear Systems: Theory, Estimation and Applications" by Hsiao-Dong Chiang and Luis F. C. Alberto is under production and will eventually be published this year by Cambridge Press.

### 4. Book chapters written

1. Bingo Wing-Kuen Ling, Charlotte Yuk-Fan HO and Kok-Lay TEO, "Nonconvex optimization via joint norm relaxed SQP and filled function method with application to minimax two-channel linear phase FIR QMF bank design," *Advances in Heuristic Signal Processing Applications* (Springer), pp. 1-16, 2013.
2. J. L. Ausín, J. F. Duque-Carrillo, J. Ramos and G. Torelli, From handheld devices to near-invisible sensors: the road to pervasive e-health, in *Pervasive and Mobile Sensing and Computing for Healthcare. Technological and Social Issues*, S. C. Mukhopadhyay and O. A. Postolache (Eds.), Springer, Berlin Heidelberg, Germany, pp. 135-156, 2013.  
  
Series: Smart Sensors, Measurement and Instrumentation (Ed.: S. C. Mukhopadhyay), Volume 2.

### 6. Conferences, workshops, organized by members

1. Wing-Kuen Ling: *Technical Program Chair of IEEE International Conference on Consumer Electronics, 2014*
2. Wing-Kuen Ling: *Technical Program Chair of IET International Conference on Smart Grid Systems, 2014*
3. Abdelali El Aroudi: General Chair of the 21<sup>st</sup> edition of Seminar on Automation, Instrumentation and Automatic Control, SAAEI 2014, Tangier, Morocco.
4. Abdelali El Aroudi: Track Chair. 2014 Latin American Symposium on Circuits and Systems
5. Abdelali El Aroudi: Member of the steering committee of International Conference on Nonlinear Structural Dynamics and Diagnosis, 2014, Agadir, Morocco
6. Abdelali El Aroudi: Member of the steering committee of International Conference on Applied Automation and Industrial Diagnostic, ICAADI 2015 Algeria

7. *Abdelali El Aroudi*: Member of the steering committee of International Conference on Power Electronics and their Applications ICPEA 2015, Algeria.
8. Tsorng-Juu (Peter) Liang: Program Chair, 2013 International Future Energy Electronics Conference
9. Tsorng-Juu (Peter) Liang: Technical Committee Chair on High performance and Emerging Technologies, IEEE Power Electronics Society
10. Silvano Vergura: Chair at the ICREPQ conference March2013-April2014
11. Hiroo Sekiya: Technical Program Chair, International Workshop on Nonlinear Circuits, Communications, and Signal Processing (NCSP2014), Honolulu, Hawaii, Mar. 1-3, 2014.
12. Hiroo Sekiya: Technical Program Chair, 2nd Korea-Japan Joint Workshop on Complex Communication Sciences (KJCCS2013), Oct. 17-19, 2013
- 13; Luis F. C. Alberto: Technical Program Chair, 18th Power System Computation Conference, PSCC 2014
14. Luis F. C. Alberto: Technical Program Chair, Brazilian Conference of Automation, CBA 2014
15. Luis F. C. Alberto: Technical Program Chair, Brazilian Symposium on Electrical Power Systems, SBSE 2014

## **7. Invited lectures delivered and visits**

14/6/2013 Prof. Wing-Kuen Ling from School of Information Engineering, Guangdong University of Technology 凌永权 has delivered the lecture: "Optimal pulse width modulation control for switched capacitor DC-DC converters", in the School of Physics and Electronic Engineering, Guangzhou University.

16/4/2013 Prof. Wing-Kuen Ling from School of Information Engineering, Guangdong University of Technology 凌永权 has delivered the lecture: "Jean Baptiste Joseph Fourier meets Stephen Hawking" in the Faculty of Information Engineering, Guangdong University of Technology

1/8/2013-31/8/2013 Wing-Kuen Ling has visited the Center for Multimedia Signal Processing, Department of Electronic and Information Engineering, Hong Kong Polytechnic University.

## **8. Special sessions organized**

1. Hiroo Sekiya: Special Session on Complex Communication Sciences, International Workshop on Nonlinear Circuits, Communications, and Signal Processing (NCSP2014), Honolulu, Hawaii, Mar. 1-3, 2014.

2. Hiroo Sekiya (Secretary): Special Section on Analog Circuit Techniques and Related Topics, IEICE Trans. on Fundamentals, issued in March, 2014.
3. Hiroo Sekiya(Secretary): Special Section on Communication Sciences and Engineering, IEICE NOLTA Journal, Apr. 2014.
4. Silvano Vergura: Special Session at the ICREPQ conference March2013-April2014
5. Abdelali El Aroudi and Damian Giaouris: "Nonlinear Dynamics of Power Converters", IECON 2013, Vienna
6. Abdelali El Aroudi and Damian Giaouris: Minisymposium at the International Conference on Nonlinear Structural Dynamics, "Nonlinear dynamics, Bifurcations and Analysis of Chaos in Electrical and Electromechanical systems", Agadir ,2014.
7. Abdelali El Aroudi, Eduard Alarcon and E. Blokhina: "Nonlinearities in Energy Harvesting Systems: Analysis and Applications", IEEE ISCAS 2014, Melbourne, Australia.
8. Abdelali El Aroudi and Damian Giaouris: "Nonlinear Dynamics of Interconnected Power Converters", NOLTA 2014, Luzern, Switzerland.
9. Abdelali El Aroudi and A. Kouzou: "Technologies for Renewable Energy", SSD 2014, Castelldefels, Spain.
10. Wing-Kuen Ling: "Optimal Time Frequency Techniques for Signal Processing and Communications" in IEEE/IET International Symposium on Communication Systems, Networks and Digital Signal Processing 2014.
11. Chia-Chi Chu and Luis F. C. Alberto, " Applications of Advanced Nonlinear Theory to Smart Grids ", IEEE ISCAS 2014, Melbourne.
12. Eduard Alarcon and Patrick Hu : Circuital Aspects of Emergent Application of Wireless Power Transfer Systems, IEEE ISCAS 2014, Melbourne

## **9. Other activities**

### Awards:

Wing-Kuen Ling: *2013 China National Thousand People Plan Distinguished Professor Award*

Wing-Kuen Ling: *2014 Advanced Technology Research*

Wing-Kuen Ling: *2014 Innovation Research in Information Science*

Wing-Kuen Ling: *Best Paper Award in Session of the ICCE-C 2014 and Merit Award of the ICCE-C 2014 from the IEEE Consumer Electronics Society*

Wing-Kuen Ling: *Best Paper Award in Session of the IECON 2013 from the IEEE Industrial Electronics Society*

Administrative Positions:

Tsorng-Juu (Peter) Liang: Deputy Chair, 2014-2015 IEEE Tainan Section

Tsorng-Juu (Peter) Liang: Board of Governor, IEEE Tainan Section

Tsorng-Juu (Peter) Liang: Board of Governor, The Chinese Institute of Electrical Engineering, Kaohsiung Branch

Tsorng-Juu (Peter) Liang: Co-PI, Green Energy of National Program for Intelligent Electronics, NSC

Luis F. C. Alberto: Secretary Director of the Brazilian Society of Automation (2012-2014)