



Circuits and Systems
Society

Annual Report of the Power and Energy Circuits and Systems (PECAS) Technical Committee 2012/2013

Compiled by H. Koizumi

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 committee members has been approximately stable at 35. They have been involved in a large number of various activities advancing and promoting the field of PECAS.

1. IEEE ISCAS 2013

Regular Papers: The total number of the submitted papers was 77, out of which there were 35 accepted, which resulted in acceptance rate of 45.5%. The 35 accepted regular papers were organized into 5 Lecture Sessions and 2 Poster Sessions. The following the title of sessions held at 2013 ISCAS:

- Power and Energy Circuits and Systems
- Integrated Power Circuits and Charge Pumps
- Power Converters, Modeling, Dynamics, Control, and Driving
- Circuits and Systems for Energy Harvesting
- Circuits and Systems for Renewable Power Sources
- Power Converters, Modeling, Dynamics, Control, and Driving
- Circuit Applications for Smart Grids

Special Sessions:

- Power electronics for smart grid
- Nonlinear methods for power grids with renewable energy sources (with NC)
- Nonlinearity in energy harvesters – analysis & applications (with NC)

2. Editorial Services

Report for period 2012 – 2013, TCAS-I and TCAS-II

IEEE Transactions on Circuits and Systems (TCAS-I), Part I, Regular Papers:

Associate Editor, Dr. Souvik Chattopadhyay: 16 submitted; 1 accepted; 9 rejected or transferred to another journal; 1 recommended for major revisions; 2 recommended for minor revisions; and 4 under review.

Associate Editor, Dr. Henry Chung: 13 submitted; 0 accepted; 9 rejected or transferred to another journal; 2 recommended for major revisions; 1 recommended for minor revisions; and 3 under review.

Associate Editor, Dr. Tsorng-Juu (Peter) Liang: 1 submitted; 0 accepted; 1 rejected or transferred to another journal; 0 recommended for major revisions; 0 recommended for minor revisions; and 0 under review.

Summary Totals: 30 submitted; 1 accepted; 19 rejected or transferred to another journal; 7 recommended for major and minor revision; and 7 under review

TCAS-II

Associate Editor, Dr. Philip Mok: 17 submitted; 1 accepted; 8 rejected or transferred to another journal; 2 recommended for major revisions; 3 recommended for minor revisions; and 3 under review.

Associate Editor, Dr. Edoardo Bonizzoni: 19 submitted; 3 accepted; 10 rejected or transferred to another journal; 4 recommended for major revisions; 0 recommended for minor revisions; and 2 under review.

Associate Editor, Dr. Ke-Horng Chen: 15 submitted; 4 accepted; 4 rejected or transferred to another journal; 5 recommended for major revisions; 1 recommended for minor revisions; and 1 under review.

Summary Totals: 51 submitted; 8 accepted; 22 rejected or transferred to another journal; 15 recommended for major and minor revision; and 6 under review

3. Books written/edited by members

1. A. Ioinovici: "Fundamentals and Hard-switching Converters," of the 5-volumes series Power Electronics and Energy Conversion Systems Volume 1: John Wiley @ Sons Ltd, 2013 (870 pages)

2. N. Femia, G. Petrone, G. Spagnuolo, M. Vitelli: Power Electronics and Control Techniques for Maximum Energy Harvesting in Photovoltaic Systems, 2012, CRC Press, Taylor & Francis group, ISBN: 978-1-4665-6416-9.

3. S. Vergura, Elettrotecnica, Edises, 2013.

4. G. Rizzoni, F. Vacca, S. Vergura, Elettrotecnica, McGraw-Hill, 2013.

5. D. Ma, R. Bondade, Reconfigurable Switched-Capacitor Power Converters, ISBN 978-1-4614-4186-1 and 978-1-4614-4187-8 (e-Book), Springer, 1st Edition, New York, 2012.

6. T. Suetsugu: Supervisor of translation : RF Power Amplifiers for Wireless Communications (Japanese translation) / Steve Cripps / CQ Publishing

(2012.11).

7. E. Rodriguez, A. el Aroudi, E. Alarcon: "Chaos in Switching Converters for Power Management: Designing for Prediction and Control," Springer 2012.

4. Book chapters written

1. J. L. Ausin, J. F. Duque-Carrillo, J. Ramos and G. Torelli: "From handheld devices to near-invisible sensors: the road to pervasive e-health", in Pervasive Sensing and Computing for HealthCare. Technological and Social Issues (S. C. Mukhopadhyay and O. A. Postolache, Editors), Springer, Berlin Heidelberg (Germany), pp. 135-156, 2013.

2. D. Ma, "SIMO Integrated Power Converters with PCCM Operation Schemes and Circuit Designs", Recent Advances in Power Management Integrated Circuits and Technologies (Editors: M. Hella, K. Iniewski), CRC Press, 1st Edition, in press.

3. E. Alarcon, V. Yousefzadeh, A. Prodic and D. Maksimovic: "Data conversion Pulse-width modulators for switched-mode power converter digital control," an invited book chapter in Analog Circuit Design 2011, (Editors: M. Steyaert, A. van Roermund and A. Baschiroto), Springer Verlag 2012.

5. Special issues edited

1. T.-J. Liang: Associate Editor of IEEE Trans. on Circuits and Systems-I.

2. T.-J. Liang: Associate Editor of IEEE Trans. on Power Electronics.

3. T.-J. Liang: Associate Editor of IEEE Journal of Emerging and Selected Technology Power Electronics.

4. T.-J. Liang: Guest Associate Editor of IEEE Trans. on Special Issue on Power Electronics in Dc Distribution System.

5. L. F C Alberto: Associate Editor of the journal JCAES - Journal Control, Automation and Electrical System. I.

6. E. Alarcon: Invited Associate Editor of the IEEE Transactions of Power Electronics (TPELs), IEEE Power Electronics Society, Special issue on "Power Supply on Chip", Guest co-editors: Cian O Mathuna, Yan-Fei Liu, December 2012.

6. Conferences, workshops, organized by members

1. A. Ioinovici: Track Chair and Session Chair at the 10th IEEE Int. Conf. on Power Electronics and Drive Systems, PEDS 2013.

2. T.-J. Liang: Track Chair at the 10th IEEE Int. Conf. on Power Electronics and Drive Systems, PEDS 2013,.

3. T.-J. Liang: Track Chair at the Asia Pacific Conference on Circuits and Systems 2013 JAPAN.
4. T.-J. Liang: Program Chair: The 10th International Conference on Communications, Circuits and Systems, ICCCAS 2012.
5. T.-J. Liang: International Program Committee: the 21st IEEE International Symposium on Industrial Electronics, ISIE2012 China.
6. T.-J. Liang: Symposium Program Chair at the IEEE Smart Grid Communication 2012.
7. T.-J. Liang: Technical Program Committee at the 2nd International Symposium on Next-Generation Electronics, ISNE 2013.
8. D. B. Ma: Technical Program Committee, IFIP/IEEE International Conference on Very Large Scale Integration VLSI-SoC, 2012, 2013.
9. D. B. Ma: Technical Program Committee, SRC Texas Analog Center of Excellence Annual Analog Symposium, 2012.
10. D. B. Ma: Technical Program Committee, IEEE International Symposium on Power Semiconductor Devices and ICs (ISPSD), 2012, 2013.
11. T. Suetsugu: Organizing Chair at the 10th IEEE Int. Conf. on Power Electronics and Drive Systems, PEDS 2013.
12. H. Sekiya: Finance Secretary of 2012 International Symposium on Nonlinear Theory and its Applications, NOLTA2012.
13. H. Sekiya: General Secretary of 2013 RISP International Workshop on Nonlinear Circuits, Communications and Signal Processing, NCSP2013.
14. H. Sekiya: "Nonlinear Phenomena in Power Electronics" Track Chair of The 10th IEEE International Conference on Power Electronics and Drive System, PEDS2013.
15. E. Alarcon: Special Sessions co-chair, IEEE Intl Symposium on Circuits and Systems, ISCAS 2013, Beijing, China (with Jeng-Neng Hwang Univ. Washington and Feng Wu, Microsoft Research Asia).
16. E. Alarcon: Technical program co-chair, IEEE 4th Latin American Symposium on Circuits and Systems, LASCAS 2013, Cuzco, Peru.
17. E. Alarcon: Technical Program Committee member, "Granular Power Management for SOCs", Track co-chair -with E. Alon (UC Berkeley) B. Allard (INSA Lyon) and C. Sandner (Infineon)-, 3rd International Workshop on Power Supply

On Chip, 2012, San Francisco, CA, Nov 16-18, 2012.

18. E. Alarcon: International advisory board of IEEE PEDS2013, Biannual conference on power electronics and drive systems, Kitakyushu City, Japan in April 2013.

19. E. Alarcon: Program Committee member, SPIE Microtechnologies, VLSI Circuits and Systems Conference EMT102, 24 - 26 April 2013 Grenoble France.

20. E. Alarcon: Technical Program Committee member, IEEE PRIME 2013, 9th Conference on Ph. D. Research in Microelectronics and Electronics (PRIME 2013), Villach, Austria, June 2013.

21. E. Alarcon: Track chair, Analog Track, IEEE Conference on Electronics, Circuits and Systems, ICECS'2012 (Seville, Spain).

7. Invited lectures delivered

1. A. Ioinovici: Keynote Speech at 2012 7th IEEE Power Electronics and Motion Control Conf. (IPEMC'12) Harbin, China.

2. D. B. Ma: "Self-Powered Wearable Computers: An Integrated Design Approach", Kilby Research Lab, Texas Instruments, Dallas, TX, Nov. 15, 2012. (with R. Jafari and C. Sechen).

3. D. B. Ma: "An Output-Capacitor-Free Buck Converter with Nano-Second DVS and Sub-Switching-Cycle Load Transient Response", IEEE International Conference on Solid-State and Integrated Circuit Technology (ICSICT), Xi'an, China, Oct. 30. 2012.

4. D. B. Ma: "A 198-ns/V VO-Hopping Reconfigurable RGB LED Driver with Automatic VO Detection and Quasi-Constant-Frequency Predictive Peak Current Control," IEEE VLSI Symposium on Circuits, pp.184-185, Hawaii, USA, June 15, 2012.

5. D. B. Ma: "Monolithic 3V-Input Switched-Capacitor Power Converter on 65nm CMOS", FUSION Board Meeting, Dallas, TX, March 22, 2012.

6. D. B. Ma: "Energy Efficiency of Circuits and Systems", Intel, Hillsboro, OR, March 19, 2012.

7. D. B. Ma: "Adaptive Data Prediction Based Ultrasound Receiver and Beyond", invited talk, Samsung Research Lab, Richardson, TX, Feb. 28, 2012.

8. D. B. Ma: "Integrated Energy-Efficient Systems", NSF I/UCRC Industry Board Meeting, Dallas, TX, Jan. 2012.

9. T. Suetsugu: Corporate Sponsored Lecture in IEEE PEDS2013: Fundamentals of Power Amplifiers, April 23, 2013.
10. H. Sekiya: "Inductor designs using Ap and Kg methods," IEEE Industrial Electronics Society/Power Electronics Society and IEEE Industry Applications Society Taipei Chapter 2012 Lecture Series, National Tsing Hua University, Taiwan, 4 Dec., 2012.
11. H. Sekiya: "High-efficiency power amplifiers and their design procedures," IEEE CASS (Circuits and Systems Society) Networking CASS Chapters in Asia-Pacific, Ajou University, Korea, 21 Nov., 2012.
12. E. Alarcon: "Energy harvesting: device, circuit and system co-design and on-chip integration", University of Freiburg - IMTEK, Germany, March 2013.
13. E. Alarcon: "\"Towards nanotechnology-based energy-harvesting-enabled Internet of Things", February 2013, Northeastern University, Boston, Massachusetts, USA.
14. E. Alarcon: "Energy harvesting: device, circuit and system co-design and on-chip integration", February 2013, Intel Labs, Intel's Microprocessor Design Center, Hudson, Massachusetts, USA.
15. E. Alarcon: Tutorial at the 2012 Asia Pacific Conference on Circuits and Systems (2012 APCCAS), "Energy harvesting: device, circuit and system co-design and on-chip integration", Kaohsiung, Taiwan, October 2012.
16. E. Alarcon: "Towards nanotechnology-based energy-harvesting-enabled Internet of Things", Oct 30th 2012, Moscow Institute of Electronic Technology, MIET, Zelenograd, Moscow, Russia.
17. E. Alarcon: Invited seminar, "Power management for Energy harvesting in portable medical ASICs", Sept 26th 2012, Institute of Microelectronics Seville-CSIC, Seville, Spain.
18. E. Alarcon: Tutorial at the 2012 International Symposium on VLSI Design, Automation & Test (2012 VLSI-DAT), Hsinchu, Taiwan, May 2012.
19. E. Alarcon: Invited talk, "Energy harvesting: device, circuit and system co-design and on-chip integration", University of Freiburg - IMTEK, Germany, March 2013.
20. E. Alarcon: "Towards nanotechnology-based energy-harvesting-enabled Internet of Things", February 2013, Northeastern University, Boston, Massachusetts, USA.

21. E. Alarcon: "Energy harvesting: device, circuit and system co-design and on-chip integration", February 2013, Intel Labs, Intel's Microprocessor Design Center, Hudson, Massachusetts, USA.

22. E. Alarcon: Tutorial at the 2012 Asia Pacific Conference on Circuits and Systems (2012 APCCAS), "Energy harvesting: device, circuit and system co-design and on-chip integration", Kaoshung, Taiwan, October 2012.

23. E. Alarcon: "Towards nanotechnology-based energy-harvesting-enabled Internet of Things", Oct 30th 2012, Moscow Institute of Electronic Technology, MIET, Zelenograd, Moscow, Russia.

24. E. Alarcon: Invited seminar, "Power management for Energy harvesting in portable medical ASICs", Sept 26th 2012, Institute of Microelectronics Seville-CSIC, Seville, Spain.

25. E. Alarcon: Tutorial at the 2012 International Symposium on VLSI Design, Automation & Test (2012 VLSI-DAT), Hsinchu, Taiwan, May 2012.

26. L. F C Alberto, "Stability Regions of Nonlinear Dynamical Systems: Theory, Estimation and Bifurcation" Tianjin university, China, May 2013.

8. Special sessions organized

1. S Vergura: Solar Technologies, International Conference on Renewable Energy and Power Quality ICREPQ2013.

2. S Vergura: Power Electronics for Renewable Energy systems, ICREPQ2013.

3. S Vergura: Economic, Financial and Social aspects of Renewable Energy Penetration, ICREPQ2013.

4. E. Alarcon, O. Feely, H. Sekiya, A. Aroudi, and Y. Tanji: "Analysis, Design and control of Power Electronic Circuits from a Nonlinear Circuit Theory Perspective," 2012 International Symposium on Nonlinear Theory and its Applications NOLTA2012.

5. H. Sekiya and H. Funato, "Contactless power transfer and its related topics," 10th IEEE Int. Conf. on Power Electronics and Drive Systems PEDS2013.

9. Other activities

1. A. Ioinovici: Second Prize - Best Paper Award of the IEEE IAS Renewable and Sustainable Energy Conversion Systems Committee for the paper "Design and Implementation of Grid Connection Photovoltaic Micro Inverter," IEEE Energy Conversion Congress and Exposition (ECCE'12), Raleigh, NC, USA, Sept. 2012.

2. D. B. Ma: IEEE Industrial Electronics Society (IES) Student Best Paper Award (as

coauthor and student advisor), for the paper "Y. Wang, D. Ma, Design of Integrated Dual-Loop Delta-Sigma Modulated Switching Power Converter for Adaptive Wireless Powering in Biomedical Implants, IEEE Trans. on Industrial Electronics, Vol. 58, No. 9, pp. 4241-4249, Sept. 2011".

3. E. Alarcon, Senior Editorial Board of the IEEE Journal on Emerging Topics of Circuits and Systems (JETCAS) (2010-to date).

4. E. Alarcon, Editorial Board member for the Journal of Low Power Electronics (JOLPE) (2011-to date).