



**IEEE Circuits and Systems Society
Analog Signal Processing Technical Committee**

**Annual Activity Report
2004-2005**

The goal of the Analog Signal Processing (ASP) Technical Committee is to foster research, development, educational and industrial dissemination of knowledge relating to the theory, analysis, design, and practical implementation of analog circuits, and the application of analog circuit theoretic techniques to system and signal processing, ranging from basic scientific theory to industrial application. Information on the committee can be found on the world-wide web at <http://ewh.ieee.org/soc/icss/committees/asptc/index.html>.

Committee members are renown experts in analog signal processing who are both committed to, and active within, the ASP field. The committee currently has more than 50 members. In 2004, Igor M. Filanovsky took over from Wouter A.Serdijn as chair. Hanspeter Schmid remained as web coordinator and secretary.

The year 2004-2005 was again very successful for ASP. The following summarizes CASS-related activity by the committee and its members.

1. ISCAS'2005

As usual, the Analog Signal Processing (ASP) track thus far played and will play a dominant role in ISCAS'2005 (<http://www.iscas2005.org>), and a great majority of ASPTC members assisted in the preparation of the technical program as well as paper evaluations. During the last ASPTC meeting in Vancouver, Canada, a decision was made to assign three persons to coordinate ISCAS reviews starting ISCAS'2005. Based on this decision, current ASPTC chair, Igor Filanovsky, last year's chair Wouter Serdijn, Un-Ku Moon and Akira Hyogo acted as ISCAS'2004 Analog Signal Processing track co-chairs and coordinated the reviews of 399 papers submitted to the track. Papers (17 % of all papers submitted to ISCAS'2005) were submitted to Analog Signal Processing track, of which papers were selected for the final program.

Many ISCAS'2005 regular sessions will be chaired by ASPTC members, as listed below (even more ASPTC members will serve as co-chairs in other tracks):

Sessions sponsored by Analog Signal Processing Technical Committee:

Analog Signal Processing Circuits	Josef Chang, Nobukazu Takai
Data Conversion Design Techniques & Analysis	Felix Lustenberger, Sameer Sonkusale
Data Converter Application & Testing	Markus Hilfenstein, Mohammed Ismail
Error Calibration & compensation of ADCs	Eduard Alarcon, Un-Ku Moon
Pipelined ADCs	Felix Lustenberger, Un-Ku Moon
Sigma-Delta Converters I	Luis Hernandez, Sameer Sonkusale
Sigma-Delta Converters II	Ramesh Harjani, Tertulien Ndjountche
Sigma-Delta Converters III	Shantanu Chakrabartty, Luis Hernandez
Amplifiers	Gaetano Palumbo, Toshiro Tsukada
Operational Amplifiers I	Vadim Ivanov, Nobukazu Takai

Sample & Hold and Switched Capacitor Circuits
Network Synthesis
Continuous-Time Filters I
Discrete-Time Filter Techniques
Low Voltage-Low Power Filters
Technology & RF
Filters for Communications
Sensors & Actuator Interface Circuits
Voltage Regulators & References
Analog Circuits & Systems for Wireless I
Analog Circuits & Systems for Wireless II
Mixed-Signal Circuits & Testing I
Mixed-Signal Circuits & Testing II
CAD & Other Tools for Analog Design
Phase-Locked Loops and Timing

Tony Chan, Cosy Muto
Igor Filanovsky, Takahide Sato
Akira Hyogo, Khoman Phang
Joseph Chang, Jaime Ramirez-Angulo
Eduard Alarson, Gaetano Palumbo
Tadashi Shibata, Aleksandar Tasic
Tony Chan, Cosy Muto
Ralph Etienne-Cummings, Tadashi Shibata
Gabriel Rincon-Mora, Toshiro Tsukada
Ramesh Harjani, P.R. Mukund
Mourad El-Gamal, Wouter Serdijn
P.R. Mukund, Tuna Tarim
Markus Hilfenstein, Albert Wang
Gordon Roberts, Tuna Tarim
Igor Filanovsky

Other Activities:

TPC Members: Wouter Serdijn, Igor Filanovsky, Un-Ku Moon, Tor Sverre Lande, Ralph Etienne-Cummings, Orly Yadid-Pecht, Andreas Andreou
Wouter Serdijn: ASP Track Chair, Tutorial organization for ISCAS'2005

2. Other conferences and meetings

Members of ASPTC are active in organizing and coordinating several other conferences and meetings in the CAS field. The following is just a sample

- William R. Eisenstadt, Technical Program Chairman, 64th Automated Radio Frequency Techniques Group (ARFTG) Conference, Orlando FL, Nov. 3 to Dec. 3, 2004
- William R. Eisenstadt, Technical Program Co-Chair, Workshop on Test of Wireless Circuits and Systems, Cannes, Cote d' Azure, France, June 20-30, 2005.
- Wouter Serdijn and Georges Gielen, Technical Program Committee, ProRISC Workshop on Circuits, Systems and Signal Processing (<http://www.stw.nl/prorisc/index.html>)
- A. Worapishet, Review Committee Member, IEEE TENCON 2004, Chiangmai, Thailand

3. Editorial boards and publications

Members of ASPTC are active on editorial boards of IEEE and CAS-related journals and transactions, in organizing special issues for journals, and promoting ASP and CAS in other publications:

Editorial boards

IEEE Transactions on Circuits and Systems I:

- T.B. Tarim, Associated Editor,
- W.A. Serdijn, Associated Editor,
- Igor M. Filanovsky, Associated Editor
- Gert Cauwenbergs, Associated Editor
- Tor Sverre Lande, Associated Editor,
- Jose Silva-Martinez, Associated Editor,
- Gaetano Palumbo, Associated Editor
- O. Yadid-Pecht, Deputy Editor in Chief

IEEE Transactions on Circuits and Systems II:

- Andreas G. Andreou, Associated Editor
- Alyssa Apsel, Associated Editor

IEE Circuits, Devices and Systems Book Series, IEE, UK

- Yichuang Sun, Member of Editorial Board

Analog Integrated Circuits and Signal Processing, Int. J. (Kluwer Academic Publishers,

http://www.wkap.nl/journal_home.htm/0925-1030)

- T. B. Tarim, Associate editor, Mixed Signal Letters, June 2000- June 2004
- W.A. Serdijn, Member of Editorial Board

International Journal of Low-Power Electronics,

- W.A. Serdijn, Member of Editorial Board

IEEE Journal of Solid-State Circuits

- Un-Ku Moon, Associate Editor, since January 2005.

IEEE Sensors Journal (http://www.ewh.ieee.org/tc/sensors/Sensors_journal.htm)

- R. Etienne-Cummings Associate

Books and book chapters

- Ramesh Harjani, Guest Editor, Topics in High-Speed Mixed-Signal Integrated Circuits, World Scientific Publishing Company, to be published in October, 2005.
- Yongwang Ding, and Ramesh Harjani, High-Linearity CMOS RF Frontend Circuits, Kluwer Academic Publishers, October 2004
- Yichuang Sun, Editor, Test and Diagnosis of Analogue and Mixed-signal Integrated Circuits, to be published by IEE, UK
- A. Worapishet, & oth, "A Low-power Low-Voltage Bluetooth Channel Filter using Class AB CMOS Transconductors" in "Wireless Communication Circuits and Systems", ed. by Yichuang Sun, IEE London
- O. Yadid-Pecht and R. Etienne-Cummings, *CMOS Imagers: from Phototransduction to Image Processing*, Kluwer Academic Publishers, Spring 2004
- R. Etienne-Cummings, M. Clapp and V. Gruev, "Focal-Plane Analog Image Processing," in O. Yadid-Pecht and R. Etienne-Cummings, *CMOS Imagers: from Phototransduction to Image Processing*, Kluwer Academic Publishers, Spring 2004
- O. Yadid-Pecht and R. Etienne-Cummings, *CMOS Imagers: from Phototransduction to Image Processing*, Kluwer Academic Publishers, May 2004.
- I. Shcherback and O. Yadid-Pecht, "CMOS APS MTF Modeling", in O. Yadid-Pecht and R. Etienne-Cummings, *CMOS Imagers: from Phototransduction to Image Processing*, Kluwer Academic Publishers, May 2004.
- I. Shcherback and O. Yadid-Pecht, "Photoresponse Analysis and Pixel Shape Optimization for CMOS APS", in O. Yadid-Pecht and R. Etienne-Cummings, *CMOS Imagers: from Phototransduction to Image Processing*, Kluwer Academic Publishers, May 2004.
- A. Fish and O. Yadid-Pecht, "Active Pixel Sensor Design – from pixels to systems", in O. Yadid-Pecht and R. Etienne-Cummings, *CMOS Imagers: from Phototransduction to Image Processing*, Kluwer Academic Publishers, May 2004.

Special issues

- Ramesh Harjani, Guest Editor, International Journal of High-Speed Electronics and Systems, Special issue on "High-Speed Mixed-Signal Integrated Circuits" 2004
- Ramesh Harjani, Guest Editor, Analog Integrated Circuits and Signal Processing, Special issue for the International Symposium on Circuits and Systems, 2004
- Yichuang Sun, Guest Editor, Special Issue on Analogue and Mixed-signal Test for Systems on Chip, IEE Proceedings: Circuits, Devices and Systems, August 2004.
- Yichuang Sun, Guest Editor, Special Issue on MIMO Wireless and Mobile Communications, IEE Proceedings: Communications, to be published.
- T. B. Tarim, Guest editor of the special issue entitled "ISQED'2003 special issue", published in Analog Integrated Circuits and Signal Processing, volume 42, No: 3, March 2005

- T.B. Tarim, Guest editor of the special issue entitled "Analog/mixed signal circuit design and synthesis I", published in *Analog Integrated Circuits and Signal Processing*, volume 42, No: 3, March 2005
- R. Etienne-Cummings, Guest Editor: *Kluwer's AICSP Journal*, Special Issue on Smart Sensors, July 2004

Journal publications

- C. Cho, W.R. Eisenstadt, B. Stengel, and E. Ferrier, IIP3 Estimation from the Gain Compression Curve, *IEEE Trans on MTT*, Vol. 53, No. 4, April 2005, pp. 1197-1202.
- Y. Eo, S. Shin, W. R. Eisenstadt and J. Shim, A Decoupling Technique for Efficient Timing Analysis of VLSI Interconnects with Dynamic Current Switching, *IEEE-Trans.on CAD*, Vol. 23, No. 9, Sept. 2004, pp. 1321-1337.
- S. Shin, Y. Eo, W. R. Eisenstadt and J. Shim, Analytical Models and Algorithms for the Efficient Signal Integrity Verification of Inductance-Dominant Multi-Coupled VLSI Interconnects, *IEEE-Trans. on VLSI*, Vol. 12, No. 4, pp. 395-407, April 2004.
- A. Tasic, W.A. Serdijn and J.R. Long, Design of Multi-Standard Adaptive Voltage-Controlled Oscillators, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 53, No 2, Feb. 2005, pp. 556 – 563
- A. Worapishet, P. Sirisuk, S. Tanoi, High-speed Switched-Current Matched filter for WCDMA receivers, *Electronics Letters*, vol. 40 , no. 11 , 27 May 2004, pp. 639 – 640.
- A. Worapishet, P. Sirisuk, Low Power Switched-Current FIR Core for Modern Wireless Transceivers, *IEICE Trans. on Electronics*, vol. E-87-C, no. 1, Nov. 2004, pp.1903 – 1909.
- B. Sahu and G. A. Rincon-Mora, A High-Efficiency Linear RF Power Amplifier With a Power-Tracking Dynamically Adaptive Buck-Boost Supply, *IEEE Trans. on Microwave Theory and Techniques*, pp. 112-120, vol. 52, no. 1, Jan. 2004.
- B. Sahu and G.A. Rincon-Mora, A low voltage, non-inverting, dynamic, synchronous buck-boost converter for portable applications, *IEEE Trans. on Power Electronics*, vol. 19, no. 2, pp. 443-452, Feb. 2004.
- H. W. Su and Yichuang Sun, Performance analysis and comparison of multiple loop feedback OTA-C filters, accepted by *International Journal of Circuits, Systems and Computers*.
- C.-M. Chang, B. M. Al-Hashimi, and Yichuang Sun, New high-order filter structures using only single-ended-input OTAs and grounded capacitors, *IEEE Trans. on Circuits and Systems-II*, September 2004.
- Y. He, Y. Tan, and Yichuang Sun, "Wavelet neural network approach for fault diagnosis of analogue circuits," *IEE Proceedings: Circuits, Devices and Systems*, August 2004.
- Y. He, J. Jiang, and Yichuang Sun, "A low distortion wide tuning range CMOS fully differential fourth order Bessel filters for GSM systems," *Int. J.of Analog Integrated Circuits and Signal Processing*, October, 2004.
- Byunghoo Jung, and Ramesh Harjani, Designing LC VCOs Using Capacitive Degeneration Techniques, to appear in *International Journal of High Speed Electronics and Systems*, special issue on High-Speed Mixed-Signal Integrated Circuits, October 2005.
- Yongwang Ding, and Ramesh Harjani, A CMOS High Efficiency +22dBm Linear Power Amplifier, " to appear in *Journal of Solid-State Circuits*, 2005
- Mi-Kyung Oh, Byunghoo Jung, Ramesh Harjani, and Dong-Jo Park, New Noncoherent Receiver for UWB Impulse Radio", *IEEE Communications Letters*, Vol 9, No.2, Feb. 2005
- Byunghoo Jung and Ramesh Harjani, A 20 GHz VCO with 5 GHz Tuning Range in 0.25 um SiGe BiCMOS", *IEEE Journal of Solid-State Circuits*, December 2004
- J. Li, G. Ahn, D. Chang, and U. Moon, "A 0.9V 12mW 5MSPS algorithmic ADC with 77dB SFDR," *IEEE J. Solid-State Circuits*, Apr. 2005.
- V. Sharma, A. Narayanan, T. Rengachari, G. Temes, F. Chaplen, and U. Moon, "A low-cost, portable generic biotoxicity assay for environmental monitoring applications," *Biosens. Bioelectron.*, to appear, 2005.
- A. Rao, W. McIntyre, U. Moon, and G. Temes, "Noise shaping techniques applied to switched capacitor voltage regulators," *IEEE J. Solid-State Circuits*, pp. 422-429, Feb. 2005.
- D. Chang, G. Ahn, and U. Moon, "Sub-1V design techniques for high-linearity multi-stage/pipelined analog-to-digital converters," *IEEE Trans. Circuits Syst. I*, vol. 52, no. 1, pp. 1-12, Jan. 2005.
- D. Chang, J. Li, and U. Moon, "Radix-based digital calibration techniques for multi-stage recycling pipelined ADCs," *IEEE Trans. Circuits Syst. I*, vol. 51, no. 11, pp. 2133-2140, Nov. 2004.
- P. Hanumolu, M. Brownlee, K. Mayaram, and U. Moon, "Analysis of charge-pump phased-locked loops," *IEEE Trans. Circuits Syst. I*, vol.51, no. 9, pp. 1665-1674, Sep. 2004.
- J. Li and U. Moon, "A 1.8V 67mW 10b 100MS/s pipelined ADC using time-shifted CDS technique," *IEEE J. Solid-State Circuits*, vol. 39, no. 9, pp. 1468-1476, Sep. 2004.
- S. Yoo, J. Park, S. Lee, and U. Moon, "A 2.5-V 10-b 120-MSample/s CMOS pipelined ADC based on merged-capacitor switching," *IEEE Trans. Circuits Syst. II*, vol. 39, no. 5, pp. 269-275, May 2004.
- M. Clapp and R. Etienne-Cummings, "Sensing Signal Input Bearing to a Sensor Array Using Velocity-Sensitive Spatiotemporal Filters," *IEE Electronics Letters*, Vol. 40, No. 3, pp. 211-212, February 2004.
- V. Gruev and R. Etienne-Cummings, "A Pipelined Temporal Difference Imager," *IEEE J. Solid-State Circuits*, Vol. 39, No. 3, pp. 538 – 543, March 2004.

- R. Philipp and R. Etienne-Cummings, "A Single Chip Stereo Vision System," *Analog Integrated Circuits and Signal Processing Journal*, Vol. 7, pp. 703-712, July 2004.- D. M. Binkley, C. E. Hopper, J. D. Cressler, M. M. Mojarradi, and -D. M. Binkley, C. E. Hopper, J. D. Cressler, M. M. Mojarradi, and J. Blalock, "Noise Performance of 0.35-um SOI CMOS Devices and Micropower Preamplifier Following 63-MeV, 1-Mrad (Si) Proton Irradiation," *IEEE Transactions on Nuclear Science*, vol. 51, no. 6, December 2004, pp. 3788-3794.
- A. Fish and O. Yadid Pecht, "Adaptive thresholding for visual attention and tracking systems", *Optical Engineering*, Vol. 43, Issue 6, pp. 1278-1279, June 2004.
- A. Belenky, A. Fish, S. Hamami, V. Milrud and O. Yadid-Pecht, "Method for expanding the dynamic range of the readout integration circuits for uncooled microbolometer sensors", *Optical Engineering*, Vol. 43, Issue 06, pp. 1274-1275, June 2004.
- A. Fish, D. Akselrod, O. Yadid-Pecht, "A "Smart Sensor" for High Precision Image Centroid computation via a Low Resolution Winner-take-all Circuit in Conjunction with a Dynamic Element matching Algorithm", *Analog Integrated Circuits and Signal Processing journal*, Vol. 39, No. 3, pp. 251-266, June 2004.
- S. Diller, A. Fish, O. Yadid-Pecht, "Advanced Output Chains for CMOS Image Sensors Based on an Active Column Sensor Approach – A Detailed Comparison", *Sensors & Actuators: A. Physical*, Volume 116, Issue 2, pp. 304-311, October 2004.
- M. Herscovitz, O. Yadid-Pecht, "A modified Multi Scale Retinex Algorithm with an Improved Global Impression of Brightness for Wide Dynamic Range Pictures", *Machine Vision and Applications journal*, Volume 15, Number 4, pp. 220-228, October 2004.
- I. Shcherback, T. Danov, O. Yadid-Pecht, "A Comprehensive CMOS APS Crosstalk Study: Photoresponse Model, Technology and Design Trends", *IEEE Trans. on Elec. Dev.*, Volume 51, Number 12, pp. 2033-2041, December 2004.
- E. Artyomov, O. Yadid-Pecht, "Practical, computation efficient High-Order Neural Network for rotation and shift invariant pattern recognition", *International Journal on Information Theory and Applications*, Volume 11, pp. 53-57, December 2004.
- T. Danov, I. Shcherback, O. Yadid-Pecht, "Study of CMOS APS responsivity enhancement: Ring shaped Photodiode", *IEEE Trans. on Elec. Dev.*, Volume 52, Number 1, pp. 126-129, January 2005.
- B. Maliatski, O. Yadid-Pecht, "Hardware driven adaptive k-means clustering for real time video imaging", *IEEE TCSVT*, Vol. 15, No 1, pp. 164-166, January 2005.
- B. K. Swann, B. J. Blalock, L. G. Clonts, D. M. Binkley, J. M. Rochelle, E. Breeding, and K. M. Baldwin, "A 100-ps Time-Resolution CMOS Time-to-Digital Converter for Positron Emission Tomography Imaging Applications," *IEEE J. of Solid-State Circuits*, vol. 39, no. 11, November 2004, pp. 1839-1853.
- Paton, S.; Di Giandomenico, A.; Hernandez, L.; Wiesbauer, A.; Potscher, T.; Clara, M, A 70-mW 300-MHz CMOS continuous-time /spl Sigma//spl Delta/ ADC with 15-MHz bandwidth and 11 bits of resolution, *IEEE Journal of Solid-State Circuits*, Vol. 39, no. 7, July 2004, pp. 1056 – 1063.
- Hernandez, L.; Prefasi, E.; Rombouts, P., Sixth-order programmable bandwidth bandpass sigma-delta modulator implemented with transmission lines. *Electronics Letters*, Vol. 40, no. 25, 9 Dec. 2004, pp. 1575 – 157.
- A. van Schaik and S. Shamma, "A neuromorphic sound localizer for a smart MEMS system," *Analog Integrated Circuits & Signal Processing*, vol. 39, pp. 267-273, 2004.
- C. Jin, A. Corderoy, S. Carlile, and A. van Schaik, "Contrasting monaural and interaural spectral cues for human sound localization," *Journal of the Acoustical Society of America*, vol. 151, pp. 3124-3141, 2004.
- T. Delbruck and A. van Schaik, "Bias Current Generators with Wide Dynamic Range," *Analog Integrated Circuits and Signal Processing*, vol. 42, 2005.
- V. Best, A. van Schaik, and S. Carlile, "Separation of concurrent broadband sound sources by human listeners.," *Journal of the Acoustical Society of America*, vol. 151, pp. 324-336, 2004.
- V. Best, A. van Schaik, C. Jin, and S. Carlile, "Sharing auditory space: sound localisation in the presence of a masker," *Acta Acustica*, Special issue: Workshop on spatial and binaural hearing, 2004.
- M. S. Dragic, I. M. Filanovsky, M. Margala, 2004, A novel on-chip amplifier for fast IDD current monitoring, *Analog Integrated Circuits and Signal Processing*, vol. 41, No.2/3, pp.185-198.
- I. M. Filanovsky, P.N. Matkhanov, 2004, Synthesis of a pulse-forming reactance network shaping a quasi-rectangular delayed output pulse, *IEEE Trans. Circuits and Systems, Part I*, vol. 51, no 4.

Conference proceedings

- T.B. Tarim, Mixed signal and SoC design flow requirements, to be published in the Proceedings of Mentor Graphics User2User Conference, Santa Clara, California, April 2005
- T.B. Tarim, Mixed signal and SoC design flow requirements, to be published in the Proceedings of the IEEE International Symposium on Circuits and Systems, Kobe, Japan, May 2005
- T. Zhou and T.B. Tarim, An efficient and well-controlled SoC development flow: Design approved specification and design guided test plan, to be published in the proceedings of the IEEE International Symposium on Circuits and Systems, Kobe, Japan, May 2005

- V. Gupta, G. A. Rincon-Mora, P. Raha, Analysis and Design of Monolithic, High PSR, Linear Regulators for SoC Applications, Proc. IEEE International System on Chip (SOC) Conference, Santa Clara, California, pp. 311-315, 2004.
- N.A. Keskar and G.A. Rincon-Mora, Self-Stabilizing, Integrated, Hysteretic Boost DC-DC Converter, IEEE Industrial Electronics Conference (IECON), TA3-4, Busan, Korea, November 2-6, 2004.
- M. Chen and G.A. Rincon-Mora, A Self-Powered, Self-Sustaining System-on-Chip (SOC) Solution Powered from Hybrid Micro-Fuel Cells, 24th Army Science Conference, Orlando, Florida, Nov. 28 - Dec. 2, 2004.
- B. Sahu and G.A. Rincon-Mora, Adaptive Power Management of Linear RF Power Amplifiers- An Integrated System Design Approach, 2004 IEEE Asia-Pacific Microwave Conference (APMC), New Delhi, India, December 15-18, 2004.
- B. Sahu and G.A. Rincon-Mora, A high-efficiency, dual-mode, dynamic, buck-boost power supply IC for portable applications, IEEE International Conference on VLSI Design, Kolkata, India, January, 2005.
- V. Gupta and G.A. Rincon-Mora, Predicting and Designing for the Impact of Process Variations and Mismatch on the Trim Range and Yield of Bandgap References, IEEE International Symposium on Quality Electronic Design, Santa Clara, California, 2005.
- V. Gupta and G.A. Rincon-Mora, A Low Dropout, CMOS Regulator with High PSR over Wideband Frequencies,, IEEE International Symposium on Circuits and Systems, Kobe, Japan, May, 2005.
- U. Mallik, E. Choi, M. Clapp, G. Cauwenberghs and R. Etienne-Cummings, "Temporal Change Threshold Detection Imager," accepted for *ISSCC'05 Digest of Technical Papers*, Vol. 48, Feb 2005.
- R. J. Vogelstein, U. Mallik, G. Cauwenberghs, E. Culurciello and R. Etienne-Cummings, "Saliency-Driven Image Acuity Modulation on a Reconfigurable Silicon Array of Spiking Neurons," *accepted for Proc. of Neural Information Processing Systems*, Vancouver, Canada, December 2004.
- F. Tenore, R. Etienne-Cummings and M. A. Lewis, "Entrainment of Silicon Central Pattern Generators for Legged Locomotory Control," *Proc. of Neural Information Processing Systems 16*, S. Thrun, L. Saul and B. Scholkopf (Eds.), MIT Press, Cambridge, MA, 2004.
- J. Vogelstein, U. Mallik, E. Culurciello, R. Etienne-Cummings and G. Cauwenberghs, "Spatial Acuity Modulation of an Address-Event Imager," *IEEE ICECS 2005*, Tel Aviv, Israel, December 2004.
- V. Gruev and R. Etienne-Cummings, "Active Pixel Sensor with On-Chip Normal Flow Computation on the Read-Out," *IEEE ICECS 2005*, Tel Aviv, Israel, December 2004.
- V. Gruev, T. Horiuchi and R. Etienne-Cummings, "Linear Current Mode Imager with Low Fix Pattern Noise" *IEEE ISCAS'04*, May 2004.
- S. Mehta and R. Etienne-Cummings, "Normal Optical Flow Measurement on a CMOS APS Imager" *IEEE ISCAS'04*, Vancouver, Canada, May 2004.
- M. Clapp and R. Etienne-Cummings, "Bearing Angle Estimation For Sonar Micro-Array Using Analog VLSI Spatiotemporal Processing" *IEEE ISCAS'04*, Vancouver, Canada, May 2004.
- E. Culurciello and R. Etienne-Cummings, "Second Generation of High Dynamic Range, Arbitrated Digital Imager" *IEEE ISCAS'04*, Vancouver, Canada, May 2004.
- R. Philipp and R. Etienne-Cummings, "Low Power Current Rectifiers for Large-Scale Current-Mode Signal Processing" *IEEE ISCAS'04*, Vancouver, Canada, May 2004.
- S. Hamami, L. Fleshel and O. Yadid-Pecht, "CMOS APS Imager employing 3.3V 12 bit 6.3 MS/s pipelined ADC", Proc. IEEE ISCAS'04, vol. IV, pp. 960-963, Vancouver, Canada, May, 2004.
- A. Fish, V. Milrud and O. Yadid-Pecht, "High speed and high resolution current winner-take-all circuit in conjunction with adaptive thresholding", Proc. IEEE ISCAS'04, vol. IV, pp. 852-855, Vancouver, Canada, May, 2004.
- A. Belenky, A. Fish, S. Hamami, V. Milrud and O. Yadid-Pecht, "Widening the dynamic range of the readout integration circuit for uncooled micro-bolometer infrared sensors", Proc. IEEE ISCAS'04, vol. V, pp. 600-603, Vancouver, Canada, May, 2004.
- E. Artyomov, O. Yadid-Pecht, "Adaptive Multiple Resolution CMOS Active Pixel Sensor", Proc. IEEE ISCAS'04, vol. IV, pp. 836-839, Vancouver, Canada, May, 2004.
- E. Artyomov, O. Yadid-Pecht, "Practical, computation efficient High-Order Neural Network for rotation and shift invariant pattern recognition", Proceedings of the International Conference on Information and Communication Technologies and Programming, Varna, Bulgaria, pp. 37-44, June 2004.
- E. Artyomov, Y. Rivenson, G. Levi, O. Yadid-Pecht, "Morton (Z) scan based real time variable resolution CMOS image sensor", IEEE ICECS, December 2004, CD ROM.
- A. Fish, V. Mosheyev, V. Linkovsky and O. Yadid-Pecht, "Ultra Low-Power DFF based Shift Registers Design for CMOS Image Sensors Applications", IEEE ICECS, Tel-Aviv, Israel, December 2004, CD ROM.
- A. Fish, A. Spivakovsky, A. Golberg and O. Yadid-Pecht, "VLSI Sensor for multiple targets detection and tracking", IEEE ICECS, December 2004, CD ROM.
- A. Fish, V. Milrud and O. Yadid-Pecht, "High speed and high resolution current Loser-take-all circuit of $o(N)$ complexity", IEEE ICECS, December 2004, CD ROM.
- I. Shcherback and O. Yadid-Pecht, "CMOS APS Photoresponse and Crosstalk optimization analysis for Scalable CMOS Technologies", IEEE ICECS, December 2004, CD ROM.

- A. Fish, A. Belenky and O. Yadid-Pecht, "Low Power Global Shutter CMOS Active Pixel Image Sensor with Ultra-High Dynamic Range", IEEE ICECS, December 2004, CD ROM.
- T. Danov, I. Shcherback, O. Yadid-Pecht, "Ring-Shaped N+/P-Well Photodiode: study of responsivity enhancement", IEEE ICECS, December 2004, CD ROM.
- J. L. Gonzalez, O. Yadid-Pecht, D. Sadowski, K. V. I. S. Kaler, M. P. Mintchev, "Integrated Esophageal Pressure, pH and Bolus Transit Sensor", IEEE Sensors, 2004, CD ROM.
- I. Shcherback, A. Belenky, O. Yadid-Pecht, "CMOS APS Crosstalk; Modeling, Technology and Design Trends", IEEE Sensors, 2004, CD ROM.
- I. Shcherback, B. Lichterov, A. Belenky, O. Yadid-Pecht, "The Unique Sub-micron Scanning System: Further development and new applications", Proc of the SPIE, January 2005.
- T. Delbrück and A. van Schaik, "Bias Current Generators With Wide Dynamic Range," presented at Proceedings of the IEEE International Symposium on Circuits and Systems, Vancouver, Canada, 2004.
- H. Shiraishi and A. van Schaik, "A 2-Dimensional Active Cochlear Model for Analog VLSI Implementation," presented at Proceedings of the IEEE International Symposium on Circuits and Systems, Vancouver Canada, 2004.
- A. Parthy, C. Jin, and A. van Schaik, "Reverberation for ambient data communication," presented at Proceedings of the 2004 International Conference on Auditory Display, Sydney, Australia, 2004.
- A. McEwan and A. van Schaik, "An Alternative Analog VLSI Implementation of the Meddis Inner Hair Cell Model," presented at Proceedings of the IEEE International Symposium on Circuits and Systems, Vancouver, Canada, 2004.
- A. Kan, G. Pope, A. van Schaik, and C. Jin, "Mobile spatial audio telecommunication system," presented at Proceedings of the 2004 International Conference on Auditory Display, Sydney, Australia, 2004.
- C. Jin, J. Tan Teewoon Leung, A. Kan, D. Lin, A. van Schaik, K. Smith, and M. McGinity, "Real-time, Head-tracked 3D Audio with Unlimited Simultaneous Sounds," presented at ICAD 05, Eleventh Meeting of the International Conference on Auditory Display, Limerick, Ireland, 2005.
- V. Ivanov, I. Filanovsky, 2005, A 110 dB CMRR/PSRR/gain CMOS operational amplifier, Proc. IEEE Int. Symp. Circuits and Systems (ISCAS2005), May 23-26, Kobe, Japan (accepted for presentation and publication).
- L. B. Oliveira, A. Allam, I. M. Filanovsky, J. R. Fernandes, 2005, On phase noise in quadrature cross-coupled oscillators, Proc. IEEE Int. Symp. Circuits and Systems (ISCAS2005), May 23-26, Kobe, Japan.
- Md. M. Reja, A. Allam, I. M. Filanovsky, 2005, A new CMOS wideband RF front-end for multistandard low-IF wireless receivers, Proc. IEEE Int. Symp. Circuits and Systems (ISCAS2005), May 23-26, Kobe, Japan.
- V. Ivanov, Junlin Zhou, I. Filanovsky, 2004, A 110 dB CMRR CMOS operational amplifier with single-supply capability, Proc. 11th Int. Conf. Electronics, Circuits and Systems (ICECS2004), Dec. 12-15, Tel-Aviv, Israel.
- I. M. Filanovsky, A. Sachko, J. R. Long, 2004, A new configuration of two-stage wide-band amplifier with matched input and output impedances, Proc. 11th Int. Conf. Electronics, Circuits and Systems (ICECS2004), Dec. 12-15, Tel-Aviv, Israel.
- I. M. Filanovsky, X. Dong, 2004, Pulse-forming reactance network shapes a quasi-rectangular sinusoidal voltage, Proc. 11th Int. Conf. Electronics, Circuits and Systems (ICECS2004), Dec. 12-15, Tel-Aviv, Israel.
- I. M. Filanovsky, Md. Mahbub Reja, Ahmed Allam, 2004, A new configuration of CMOS two-stage wide-band amplifier, Proc. 47th IEEE Int. Midwest Symp. Circuits and Systems, July 25-28, Hiroshima, Japan, Vol. III, pp. 13-16.
- Luis Bica Oliveira, I. M. Filanovsky, C. J. M. Verhoeven, 2004, Exact calculation of amplitude and frequency of RC-oscillator with quadrature outputs, Proc. 47th IEEE Int. Midwest Symp. Circuits and Systems, July 25-28, Hiroshima, Japan, Vol. I, pp. 413-416.
- I. M. Filanovsky, X. Dong, 2004, On synthesis of reactance network shaping a monocycle pulse, Proc. 47th IEEE Int. Midwest Symp. Circuits and Systems, July 25-28, Hiroshima, Japan, Vol. I, pp.101-104

Invited Presentations

- W. A. Serdijn, Workshop on Advances in Analog Circuit Design (AACD'2005)
- G.A. Rincon-Mora, Guest speaker to University of Puerto Rico, El Mundo es An Logo, y las Oportunidades son Muchas, Oct. 18, 2004
- G.A. Rincon-Mora, Invited Tutorial/Seminar, Dynamically Adaptive Power Supply Circuits for PA, Wireless Applications, 2005 RFIC Conference, Los Angeles, California, June 2005.
- R. Etienne-Cummings, Invited Speaker: NSF Telluride Workshop on Neuromorphic Engineering, CO, 2004.
- R. Etienne-Cummings, Invited Speaker: Neuroscience and Cognitive Sciences, University of Maryland, College Park, MD, 2004.
- R. Etienne-Cummings, Invited Speaker: Cornell University, Ithaca, NY, 2004.
- R. Etienne-Cummings, Invited Speaker: University of Sydney, Sydney, Australia, 2004.
- R. Etienne-Cummings, Invited Speaker: Edith Cowen University, Perth, Australia, 2004.
- R. Etienne-Cummings, Invited Speaker: University of Queensland, Brisbane, Australia, 2004.
- R. Etienne-Cummings, Invited Speaker: Johns Hopkins University, Baltimore, MD, 2004.
- R. Etienne-Cummings, Invited Speaker: Mitre Corporation, McClean, VA, 2004.
- R. Etienne-Cummings, Invited Speaker: NRO, Chantilly, VA, 2005.

- R. Etienne-Cummings, Invited Speaker: Agilent Corp., Palo Alto, CA, 2005.
- R. Etienne-Cummings, Invited Speaker: SPIE Conference, Orlando FL, 2005.
- R. Etienne-Cummings, Invited Speaker: NSF Grantees Meeting, Washington, DC, 2005.
- O. Yadid-Pecht, Grand challenges in CMOS Imaging, invited for ICECS2004, Tel-Aviv, Israel, December 2004.
- O. Yadid-Pecht, Active Pixel Sensors, NSF (US) – Neuromorphic Workshop – Invited instructor, July 2004.
- V. Ivanov, I. M. Filanovsky, Invited Tutorial for ICECS2004, Tel-Aviv, Israel, December 2004, Circuit techniques for amplifier speed and accuracy improvement.
- V. Ivanov, I. M. Filanovsky, Invited Tutorial for RESMIQ, Montreal, Quebec, Canada, April 2004, Amplifiers, References, LDOs-structural design approach.

4. Distinguished Lecturer Program

Several ASPTC members are part of the IEEE distinguished lecturer program:

- O. Yadid-Pecht, Distinguished Lecturer, IEEE CASS, 2004-2005.
- A. van Schaik, *Distinguished Lecturer, INE 2004.*

5. Members of other Technical Committees

- T. B. Tarim, TPC Member, IEEE International Symposium on Quality Electronic Design (ISQED),
- W. A. Serdijn, CASS (Outstanding Young Author Committee Member), BioCAS'2004 (TPC Member), ICECS'2004 (TPC member)
- G.A. Rincon-Mora, IEEE MWSCAS Technical Program Chair (2006): 49th IEEE International Midwest Symposium on Circuits and Systems (MWSCAS), Puerto Rico.
- G.A. Rincon-Mora, IEEE SSCS-CAS Chapter Vice Chairman (2003-2004): IEEE Solid-State Circuits Society Circuits and Systems (SSCS-CAS), Atlanta Chapter.
- G.A. Rincon-Mora, IEEE SSCS-CAS Chapter Chairman (2005-2006): IEEE Solid-State Circuits, Society Circuits and Systems (SSCS-CAS), Atlanta Chapter.
- Yichuang Sun, Session Chair and Prize Judge, UK-EPSRC, IEEE and IEE PREP Conference, 2004.
- Yichuang Sun, TC Member, IASTED International Conference on Wireless Networks and Emerging Technologies, Canada, 2004.
- Yichuang Sun, TC Member, IASTED International Conference on Communications, Internet, and Information Technology, Arizona, USA, November 2004
- Yichuang Sun, TC Member, IASTED International Conference on Circuits, Signals and Systems, Canada 2005.
- Yichuang Sun, TC Member, IASTED International Conference on Communications, Internet, and Information Technology, Arizona, USA, November 2005
- Yichuang Sun, TC Member, IASTED International Conference on Wireless Networks and Emerging Technologies, Canada, 2005.
- Un-Ku Moon, TPC, IEEE Custom Integrated Circuits Conference (WIRED subcommittee chair).
- R. Etienne-Cummings, Program Committee: ISSCC, SPIE, BIS, ISCAS, NIPS, COSI
- O. Yadid-Pecht, Technical Program committee member and Session Chairman: SPIE Elec. Imaging Conference, San-Jose, CA, 2005.
- O. Yadid-Pecht, Technical Program Committee member and Session Chairman: International Symposium on Circuits and Systems, 2004
- O. Yadid-Pecht, Technical Program Committee and Session chairman: IEEE Workshop on Advanced Image Sensors, Japan, 2005.
- O. Yadid-Pecht, General chair: IEEE ICECS 2004.
- L. Hernandez, ESSCIRC 2005, Grenoble, France
- L. Hernandez, SPIE Europe International Symposium Microtechnologies for the New Millennium, 9 - 11 May 2005, Sevilla, Spain
- A. van Schaik Secretary IEEE, Joint CASS and SSCC, NSW chapter, Australia

6. Previous ISCAS'2004

- O. Yadid-Pecht, TPC member and Session Chairman.
- O. Yadid-Pecht, Chair of the Technical Committee on Sensors.
- A. van Schaik, Chair Elect of the Technical Committee on Sensors, *IEEE ISCAS, 2004*
- A. van Schaik Technical Program Committee member and Session Chairman
- W. A. Serdijn, TPC member and ASP Track Co-Chair
- I. M. Filanovsky, TPC member and ASP Track Co-Chair

7. 2005-2006 planned activities

ASPTC remains strongly committed to promote CAS interests in the ASP field, and assist with organizing and coordinating CASS-sponsored activities, such as ISCAS'2006. We will continue to seek close working relationships with other CASS technical committees in co-organizing events of interdisciplinary nature, as we have done for special sessions and tutorials at ISCAS and MWSCAS in recent years. To this end, many members of ASPTC are also members of other CASS technical committees.

Igor M. Filanovsky, Chair
April 30, 2005