

# Stanford

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## Boris Murmann

Professor of Electrical Engineering

### CONTACT INFORMATION

- **Ann Guerra**

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### Bio

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#### BIO

Boris Murmann is a Professor of Electrical Engineering at Stanford University. He joined Stanford in 2004 after completing his Ph.D. degree in electrical engineering at the University of California, Berkeley in 2003. From 1994 to 1997, he was with Neutron Microelectronics, Germany, where he developed low-power and smart-power ASICs in automotive CMOS technology. Since 2004, he has worked as a consultant with numerous Silicon Valley companies. Dr. Murmann's research interests are in mixed-signal integrated circuit design, with special emphasis on sensor interfaces, data converters and custom circuits for machine learning. In 2008, he was a co-recipient of the Best Student Paper Award at the VLSI Circuits Symposium and a recipient of the Best Invited Paper Award at the IEEE Custom Integrated Circuits Conference (CICC). He received the Agilent Early Career Professor Award in 2009 and the Friedrich Wilhelm Bessel Research Award in 2012. He has served as an Associate Editor of the IEEE Journal of Solid-State Circuits, as well as the Data Converter Subcommittee Chair and the Technical Program Chair of the IEEE International Solid-State Circuits Conference (ISSCC). He is the founding faculty co-director of the Stanford SystemX Alliance and the faculty director of Stanford's System Prototyping Facility (SPF). He is a Fellow of the IEEE.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- Best Invited Paper Award, IEEE CICC (2008)
- Best Student Paper Award, IEEE VLSI Circuit Symposium (2008)
- Outstanding Special-Topic Evening Award, International Solid-State Circuits Conference (ISSCC) (2008)
- Meritorious Paper Award, Government Microcircuit & Critical Technology Conference (2005)
- Robert N. Noyce Faculty Scholar, Stanford University (2004-2005)
- Sony Faculty Scholar, Stanford University (2010)
- Early Career Professor Award, Agilent Technologies (2009)
- Friedrich Wilhelm Bessel Research Award, Alexander von Humboldt Foundation (2012)
- Distinguished Lecturer, IEEE Solid-State Circuits Society (2011-2012)

- Fellow, IEEE (2015)

## PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

## PROFESSIONAL EDUCATION

- PhD, UC Berkeley (2003)

## Teaching

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### COURSES

#### 2019-20

- Advanced Integrated Circuit Design: EE 214B (Win)
- Circuits II: EE 101B (Spr)

#### 2018-19

- Advanced Integrated Circuit Design: EE 214B (Win)
- Circuits II: EE 101B (Spr)

#### 2017-18

- Advanced Analog Integrated Circuit Design: EE 214B (Win)
- Analog-Digital Interface Circuits: EE 315 (Aut)
- Circuits II: EE 101B (Spr)

#### 2016-17

- Advanced Analog Integrated Circuit Design: EE 214B (Win)
- Analog-Digital Interface Circuits: EE 315 (Aut)
- Circuits II: EE 101B (Spr)

## STANFORD ADVISEES

### Doctoral Dissertation Reader (AC)

Wesson Altayan, Sung-Jin Kim, Nicolo Maganzini, Sanghyeon Park, Ahmed Sawaby, Mahmoud Sawaby, Ajay Singhvi, Ernest So, Kawin Surakitbovorn, Lyne Tchampi P., Max Wang, Jiale Xu, Bryce Yao

### Postdoctoral Faculty Sponsor

Oscar Mattia, Dante Muratore

### Doctoral Dissertation Advisor (AC)

Pietro Caragiulo, Elaina Chai, Albert Gural, Vlad Kesler, Gift Nyikayaramba, Daniel Villamizar, Po-Hsuan Wei, Stephen Weinreich

### Master's Program Advisor

Zahi Hakim, Dat Nguyen, Andrew Wang

### Doctoral (Program)

Pietro Caragiulo, Elaina Chai, Vlad Kesler, Qianyun Lu, Jonas Messner, Sanghyeon Park, Po-Hsuan Wei, Stephen Weinreich

## Publications

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### PUBLICATIONS

- **A Data-Compressive 1.5/2.75-bit Log-Gradient QVGA Image Sensor With Multi-Scale Readout for Always-On Object Detection** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Young, C., Omid-Zohoor, A., Lajevardi, P., Murmann, B.  
2019; 54 (11): 2932–46
- **Intrinsically Stretchable Temperature Sensor Based on Organic Thin-Film Transistors** *IEEE ELECTRON DEVICE LETTERS*  
Zhu, C., Wu, H., Nyikayaramba, G., Bao, Z., Murmann, B.  
2019; 40 (10): 1630–33
- **A Spectrum-Sensing DPD Feedback Receiver With 30x Reduction in ADC Acquisition Bandwidth and Sample Rate**  
Hammler, N., Cathelin, A., Cathelin, P., Murmann, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2019: 3340–51
- **Custom Sub-Systems and Circuits for Deep Learning: Guest Editorial Overview** *IEEE JOURNAL ON EMERGING AND SELECTED TOPICS IN CIRCUITS AND SYSTEMS*  
Chen, C., Murmann, B., Seo, J., Yoo, H.  
2019; 9 (2): 247–52
- **Multi-scale ordering in highly stretchable polymer semiconducting films** *NATURE MATERIALS*  
Xu, J., Wu, H., Zhu, C., Ehrlich, A., Shaw, L., Nikolka, M., Wang, S., Molina-Lopez, F., Gu, X., Luo, S., Zhou, D., Kim, Y., Wang, et al  
2019; 18 (6): 594+
- **Multi-scale ordering in highly stretchable polymer semiconducting films.** *Nature materials*  
Xu, J., Wu, H., Zhu, C., Ehrlich, A., Shaw, L., Nikolka, M., Wang, S., Molina-Lopez, F., Gu, X., Luo, S., Zhou, D., Kim, Y., Wang, et al  
2019
- **Global Asymptotic Stability and Stabilization of Long Short-Term Memory Neural Networks with Constant Weights and Biases** *JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS*  
Deka, S. A., Stipanovic, D. M., Murmann, B., Tomlin, C. J.  
2019; 181 (1): 231–43
- **Low-Voltage, High-Frequency Organic Transistors and Unipolar and Complementary Ring Oscillators on Paper** *ADVANCED ELECTRONIC MATERIALS*  
Kraft, U., Zaki, T., Letzkus, F., Burghartz, J. N., Weber, E., Murmann, B., Klauk, H.  
2019; 5 (2)
- **An Always-On 3.8  $\mu$  J/86% CIFAR-10 Mixed-Signal Binary CNN Processor With All Memory on Chip in 28-nm CMOS**  
Bankman, D., Yang, L., Moons, B., Verhelst, M., Murmann, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2019: 158–72
- **Long-Short Term Memory Neural Network Stability and Stabilization using Linear Matrix Inequalities**  
Deka, S. A., Stipanovic, D. M., Murmann, B., Tomlin, C. J., IEEE  
IEEE.2019
- **A Data-Compressive Wired-OR Readout for Massively Parallel Neural Recording**  
Muratore, D. G., Tandon, P., Wootters, M., Chichilnisky, E. J., Mitra, S., Murmann, B., IEEE  
IEEE.2019
- **Toward Always-On Mobile Object Detection: Energy Versus Performance Tradeoffs for Embedded HOG Feature Extraction** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY*  
Omid-Zohoor, A., Young, C., Ta, D., Murmann, B.  
2018; 28 (5): 1102–15
- **Skin electronics from scalable fabrication of an intrinsically stretchable transistor array** *NATURE*  
Wang, S., Xu, J., Wang, W., Wang, G., Rastak, R., Molina-Lopez, F., Chung, J., Niu, S., Feig, V. R., Lopez, J., Lei, T., Kwon, S., Kim, et al  
2018; 555 (7694): 83+

- **Bit Error Tolerance of a CIFAR-10 Binarized Convolutional Neural Network Processor**  
Yang, L., Bankman, D., Moons, B., Verhelst, M., Murmann, B., IEEE  
IEEE.2018
- **A 7b 2 GS/s Time-Interleaved SAR ADC with Time Skew Calibration Based on Current Integrating Sampler**  
Jiang, W., Zhu, Y., Chan, C., Murmann, B., U, S., Martins, R., IEEE  
IEEE.2018: 235–38
- **Clock Synchronous Reset and Skew Calibration of 65GS/s ADCs in A Multi-Lane Coherent Receiver**  
Athreya, S., Hedayati, H., Kazemkhani, S., Chen, Y., Vats, S., Scott, M. D., Zeydel, B., Keller, P., Wang, J., Avula, B., Murmann, B., Iroaga, E., IEEE  
IEEE.2018: 250–53
- **TRIG: Hardware Accelerator for Inference-Based Applications and Experimental Demonstration Using Carbon Nanotube FETs**  
Hills, G., Bankman, D., Moons, B., Yang, L., Hillard, J., Kahng, A., Park, R., Verhelst, M., Murmann, B., Shulaker, M. M., Wong, H., Mitra, S., IEEE  
IEEE.2018
- **An Always-On 3.8 mu J/86% CIFAR-10 Mixed-Signal Binary CNN Processor with All Memory on Chip in 28nm CMOS**  
Bankman, D., Yang, L., Moons, B., Verhelst, M., Murmann, B., IEEE  
IEEE.2018: 222–+
- **A 56 Gb/s 6 mW 300 um(2) inverter-based CTLE for short-reach PAM2 applications in 16 nm CMOS**  
Zheng, K., Frans, Y., Chang, K., Murmann, B., IEEE  
IEEE.2018
- **An Always-On 3.8 mu J/86% CIFAR-10 Mixed-Signal Binary CNN Processor with All Memory on Chip in 28nm CMOS**  
Bankman, D., Yang, L., Moons, B., Verhelst, M., Murmann, B., IEEE  
IEEE.2018
- **BinarEye: An Always-On Energy-Accuracy-Scalable Binary CNN Processor With All Memory On Chip In 28nm CMOS**  
Moons, B., Bankman, D., Yang, L., Murmann, B., Verhelst, M., IEEE  
IEEE.2018
- **A New Figure of Merit Equation for Analog-to-Digital Converters in CMOS Image Sensors**  
Kwon, M., Murmann, B., IEEE  
IEEE.2018
- **Some Local Stability Properties of an Autonomous Long Short-Term Memory Neural Network Model**  
Stipanovic, D. M., Murmann, B., Causo, M., Lekic, A., Royo, V., Tomlin, C. J., Beigne, E., Thuries, S., Zarudniev, M., Lesecq, S., IEEE  
IEEE.2018
- **A Mixer Front End for a Four-Channel Modulated Wideband Converter With 62-dB Blocker Rejection** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Adams, D., Eldar, Y. C., Murmann, B.  
2017; 52 (5): 1286-1294
- **A highly stretchable, transparent, and conductive polymer.** *Science advances*  
Wang, Y., Zhu, C., Pfattner, R., Yan, H., Jin, L., Chen, S., Molina-Lopez, F., Lissel, F., Liu, J., Rabiha, N. I., Chen, Z., Chung, J. W., Linder, et al  
2017; 3 (3)
- **A 14-Bit 30-MS/s 38-mW SAR ADC Using Noise Filter Gear Shifting** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II-EXPRESS BRIEFS*  
Kramer, M., Janssen, E., Doris, K., Murmann, B.  
2017; 64 (2): 116-120
- **Highly stretchable polymer semiconductor films through the nanoconfinement effect** *SCIENCE*  
Xu, J., Wang, S., Wang, G. N., Zhu, C., Luo, S., Jin, L., Gu, X., Chen, S., Feig, V. R., To, J. W., Rondeau-Gagne, S., Park, J., Schroeder, et al  
2017; 355 (6320): 59-?
- **LOGNET: ENERGY-EFFICIENT NEURAL NETWORKS USING LOGARITHMIC COMPUTATION**  
Lee, E. H., Miyashita, D., Chai, E., Murmann, B., Wong, S., IEEE  
IEEE.2017: 5900–5904

- **Investigating Limiting Factors in Stretchable All-Carbon Transistors for Reliable Stretchable Electronics.** *ACS nano*  
Chortos, A., Zhu, C., Oh, J. Y., Yan, X., Pochorovski, I., To, J. W., Liu, N., Kraft, U., Murmann, B., Bao, Z.  
2017; 11 (8): 7925–37
- **A Pixel Pitch-Matched Ultrasound Receiver for 3-D Photoacoustic Imaging With Integrated Delta-Sigma Beamformer in 28-nm UTBB FD-SOI.** *IEEE journal of solid-state circuits*  
Chen, M. C., Perez, A. P., Kothapalli, S. R., Cathelin, P., Cathelin, A., Gambhir, S. S., Murmann, B.  
2017; 52 (11): 2843–56
- **Active control of probability amplitudes in a mesoscale system via feedback-induced suppression of dissipation and noise** *JOURNAL OF APPLIED PHYSICS*  
Gupta, C., Perez, A. P., Fischer, S. R., Weinreich, S. B., Murmann, B., Howe, R. T.  
2016; 120 (22)
- **The Successive Approximation Register ADC: A Versatile Building Block for Ultra-Low-Power to Ultra-High-Speed Applications** *IEEE COMMUNICATIONS MAGAZINE*  
Murmann, B.  
2016; 54 (4): 78-83
- **A 14 b 35 MS/s SAR ADC Achieving 75 dB SNDR and 99 dB SFDR With Loop-Embedded Input Buffer in 40 nm CMOS** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Kramer, M. J., Janssen, E., Doris, K., Murmann, B.  
2015; 50 (12): 2891-2900
- **Passive charge redistribution digital-to-analogue multiplier** *ELECTRONICS LETTERS*  
Bankman, D., Murmann, B.  
2015; 51 (5): 387-388
- **A Closed-Loop Reconfigurable Switched-Capacitor DC-DC Converter for Sub-mW Energy Harvesting Applications** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*  
Vaisband, I., Saadat, M., Murmann, B.  
2015; 62 (2): 385-394
- **Mismatch Characterization of Small Metal Fringe Capacitors** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*  
Tripathi, V., Murmann, B.  
2014; 61 (8): 2236-2242
- **A Four-Channel, +/- 36 V, 780 kHz Piezo Driver Chip for Structural Health Monitoring** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Guo, Y., Aquino, C., Zhang, D., Murmann, B.  
2014; 49 (7): 1506-1513
- **Static Integral Nonlinearity Modeling and Calibration of Measured and Synthetic Pipeline Analog-to-Digital Converters** *IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT*  
Medawar, S., Murmann, B., Handel, P., Bjorsell, N., Jansson, M.  
2014; 63 (3): 502-511
- **Design and Optimization of Continuous-Time Filters Using Geometric Programming** *IEEE International Symposium on Circuits and Systems (ISCAS)*  
Seth, S., Murmann, B.  
IEEE.2014: 2089–2092
- **A 160 MS/s, 11.1 mW, Single-Channel Pipelined SAR ADC with 68.3 dB SNDR** *36th Annual IEEE Custom Integrated Circuits Conference (CICC) - The Showcase for Integrated Circuit Design in the Heart of Silicon Valley*  
Tripathi, V., Murmann, B.  
IEEE.2014
- **Low-Rate Identification of Memory Polynomials** *IEEE International Symposium on Circuits and Systems (ISCAS)*  
Hammler, N., Eldar, Y. C., Murmann, B.  
IEEE.2014: 1034–1037
- **Dynamic Calibration of Undersampled Pipelined ADCs by Frequency Domain Filtering** *IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT*

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- Medawar, S., Handel, P., Murmann, B., Bjorsell, N., Jansson, M.  
2013; 62 (7): 1882-1891
- **Settling Time and Noise Optimization of a Three-Stage Operational Transconductance Amplifier** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*  
Seth, S., Murmann, B.  
2013; 60 (5): 1168-1174
  - **A 256 Pixel Magnetoresistive Biosensor Microarray in 0.18  $\mu\text{m}$  CMOS** *IEEE Radio Frequency Integrated Circuits (RFIC) Symposium in Conjunction with the IEEE MTT-S International Microwave Symposium (IMS) / Microwave Week*  
Hall, D. A., Gaster, R. S., Makinwa, K. A., Wang, S. X., Murmann, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2013: 1290-1301
  - **A Delta Sigma Interface for MEMS Accelerometers Using Electrostatic Spring Constant Modulation for Cancellation of Bondwire Capacitance Drift** *IEEE International Solid-State Circuits Conference (ISSCC)*  
Lajevardi, P., Petkov, V. P., Murmann, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2013: 265-75
  - **A 256 pixel magnetoresistive biosensor microarray in 0.18 $\mu\text{m}$  CMOS.** *IEEE journal of solid-state circuits*  
Hall, D. A., Gaster, R. S., Makinwa, K., Wang, S. X., Murmann, B.  
2013; 48 (5): 1290-1301
  - **Mismatch Characterization of Small Metal Fringe Capacitors** *35th Annual IEEE Custom Integrated Circuits Conference (CICC) - The Showcase for Circuit Design in the Heart of Silicon Valley*  
Tripathi, V., Murmann, B.  
IEEE.2013
  - **Energy Limits in A/D Converters** *IEEE Faible Tension Faible Consommation Conference (FTFC)*  
Murmann, B.  
IEEE.2013
  - **A/D Converter Circuit and Architecture Design for High-Speed Data Communication** *35th Annual IEEE Custom Integrated Circuits Conference (CICC) - The Showcase for Circuit Design in the Heart of Silicon Valley*  
Murmann, B.  
IEEE.2013
  - **Integrated Piezo-Element Drive Electronics for Structural Health Monitoring** *8th International Workshop on Structural Health Monitoring*  
Guo, Y., Murmann, B.  
DESTECH PUBLICATIONS, INC.2013: 1724-1731
  - **A Four-Channel, +/- 36 V Piezo Driver Chip for a Densely Integrated SHM System** *9th International Workshop on Structural Health Monitoring (IWSHM)*  
Guo, Y., Aquino, C., Zhang, D., Murmann, B.  
DESTECH PUBLICATIONS, INC.2013: 1551-1558
  - **High-Performance Pipelined ADCs for Wireless Infrastructure Systems** *Advances in Analog and RF IC Design for Wireless Communication Systems*  
Elliott, M., Murmann, B.  
edited by Manganaro, G., Leenaerts, D.M., W.  
Elsevier.2013
  - **An 8-bit 450-MS/s Single-Bit/Cycle SAR ADC in 65-nm CMOS**  
Tripathi, V., Murmann, B.  
2013
  - **A Four-Channel,  $\pm 36$  V, 780 kHz Piezo Driver Chip for Structural Health Monitoring**  
Guo, Y., Aquino, C., Zhang, D., Murmann, B.  
2013
  - **Static Integral Nonlinearity Modeling and Calibration of Measured and Synthetic Pipeline Analog-Digital Converters** *to appear, IEEE Trans. Instrum. Meas.*  
Medawar, S., Murmann, B., Handel, P., Bjorsell, N., Jansson, M.  
2013
-

- **Dynamic Calibration of Undersampled Pipelined ADCs by Frequency Domain Filtering** *IEEE Trans. Instrum. Meas.*  
Medawar, S., Händel, P., Murmann, B., Björnsell, N., Jansson, M.  
2013; 62 (7): 1882-1891
- **A ## Interface for MEMS Accelerometers using Electrostatic Spring-Constant Modulation for Cancellation of Bondwire Capacitance Drift** *IEEE J. Solid-State Circuits*  
Lajevardi, P., Petkov, V., P., Murmann, B.  
2013; 48 (1): 265-275
- **A 256 Pixel Magnetoresistive Biosensor Microarray in 0.18  $\mu\text{m}$  CMOS** *IEEE J. Solid-State Circuits*  
Hall, D., A., Gaster, R., S., Makinwa, K.A., A., Wang, S., X., Murmann, B.  
2013; 48 (5): 1290-1301
- **On the use of redundancy in successive approximation A/D converters**  
Murmann, B.  
2013
- **Mismatch Characterization of Small Metal Fringe Capacitors**  
Tripathi, V., Murmann, B.  
2013
- **Integrated Piezo-Element Drive Electronics for Structural Health Monitoring**  
Guo, Y., Aquino, C., Zhang, D., Murmann, B.  
2013
- **Energy limits in A/D converters**  
Murmann, B.  
2013
- **A/D Converter Circuit and Architecture Design for High-Speed Data Communication**  
Murmann, B.  
2013
- **A 12-Bit, 200-MS/s, 11.5-mW Pipeline ADC Using a Pulsed Bucket Brigade Front-End**  
Dolev, N., Kramer, M., Murmann, B.  
2013
- **A 0.11mm<sup>2</sup>, 5.7-to-6.7GHz, Parametrically Pumped Quadrature LC-VCO with Digital Outputs**  
Bhardwaj, K., Seth, S., Murmann, B., Lee, T., H.  
2013
- **Analysis and Design of Elementary MOS Amplifier Stages**  
Murmann, B.  
NTS Press.2013
- **Digitally Assisted Data Converter Design**  
Murmann, B.  
2013
- **A 12-b, 30-MS/s, 2.95-mW Pipelined ADC Using Single-Stage Class-AB Amplifiers and Deterministic Background Calibration** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Kim, J. K., Murmann, B.  
2012; 47 (9): 2141-2151
- **Engineering the metal gate electrode for controlling the threshold voltage of organic transistors** *APPLIED PHYSICS LETTERS*  
Chung, Y., Johnson, O., Deal, M., Nishi, Y., Murmann, B., Bao, Z.  
2012; 101 (6)
- **HermesE: A 96-Channel Full Data Rate Direct Neural Interface in 0.13  $\mu\text{m}$  CMOS** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Gao, H., Walker, R. M., Nuyujukian, P., Makinwa, K. A., Shenoy, K. V., Murmann, B., Meng, T. H.

2012; 47 (4): 1043-1055

- **Area scaling analysis of CMOS ADCs** *ELECTRONICS LETTERS*  
Verhelst, M., Murmann, B.  
2012; 48 (6): 314-U70
- **Mismatch of lateral field metal-oxide-metal capacitors in 180 nm CMOS process** *ELECTRONICS LETTERS*  
Abusleme, A., Dragone, A., Haller, G., Murmann, B.  
2012; 48 (5): 286-U1588
- **Micro-imprinted prism substrate for self-aligned short channel organic transistors on a flexible substrate** *APPLIED PHYSICS LETTERS*  
Jeon, J., Tee, B. C., Murmann, B., Bao, Z.  
2012; 100 (4)
- **Electrochemical quantum tunneling for electronic detection and characterization of biological toxins** *Conference on Micro- and Nanotechnology Sensors, Systems, and Applications IV*  
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SPIE-INT SOC OPTICAL ENGINEERING.2012
- **Analog-Digital Interfaces** *CHIPS 2020*  
Keller, M., Murmann, B., Manoli, Y.  
edited by Hoefflinger, B.  
Springer.2012
- **A -131-dBc/Hz, 20-MHz MEMS Oscillator with a 6.9-mW, 69-kOhm, Gain-Tunable CMOS TIA**  
Seth, S., Wang, S., Kenny, T., Murmann, B.  
2012
- **Thermal Noise in Track-and-Hold Circuits: Analysis and Simulation Techniques** *IEEE Solid-State Circuits Magazine*  
Murmann, B.  
2012; 4 (2): 46-54
- **A ## Interface for MEMS Accelerometers using Electrostatic Spring-Constant Modulation for Cancellation of Bondwire Capacitance Drift** *in ISSCC Dig. Tech. Papers*  
Lajevardi, P., Petkov, V., P., Murmann, B.  
2012: 196-197
- **A 12-bit, 30-MS/s, 2.95-mW Pipelined ADC Using Single-Stage Class-AB Amplifiers and Deterministic Background Calibration** *IEEE J. Solid-State Circuits*  
Kim, J., Murmann, B.  
2012; 47 (9): 2141-2151
- **TOWARDS AN INTEGRATED CIRCUIT DESIGN OF A COMPRESSED SAMPLING WIRELESS RECEIVER** *IEEE International Conference on Acoustics, Speech and Signal Processing*  
Adams, D., Park, C. S., Eldar, Y. C., Murmann, B.  
IEEE.2012: 5305-5308
- **Settling Time and Noise Optimization of a Three-Stage Operational Transconductance Amplifier** *IEEE International Symposium on Circuits and Systems*  
Seth, S., Murmann, B.  
IEEE.2012: 205-208
- **A 12-GS/s 81-mW 5-bit Time-Interleaved Flash ADC With Background Timing Skew Calibration** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
El-Chammas, M., Murmann, B.  
2011; 46 (4): 838-847
- **Controlling Electric Dipoles in Nanodielectrics and Its Applications for Enabling Air-Stable n-Channel Organic Transistors** *NANO LETTERS*  
Chung, Y., Verploegen, E., Vailionis, A., Sun, Y., Nishi, Y., Murmann, B., Bao, Z.  
2011; 11 (3): 1161-1165
- **Design Optimization of High-Speed and Low-Power Operational Transconductance Amplifier Using g(m)/I-D Lookup Table Methodology** *IEICE TRANSACTIONS ON ELECTRONICS*



- Konishi, T., Inazu, K., Lee, J. G., Natsui, M., Masui, S., Murmann, B.  
2011; E94C (3): 334-345
- **Feedforward Interference Cancellation Architecture for Short-Range Wireless Communication** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II- EXPRESS BRIEFS*  
Hori, S., Murmann, B.  
2011; 58 (1): 16-20
  - **Low-Power Pipelined A/D Conversion** *Analog Circuit Design*  
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Springer.2011
  - **A 256 Channel Magnetoresistive Biosensor Microarray for Quantitative Proteomics**  
Hall, D. A., Gaster, R. S., Osterfeld, S. J., Makinwa, K., Wang, S. X., Murmann, B.  
2011
  - **Integrated Piezo-element Drive Electronics for Structural Health Monitoring**  
Guo, Y., Murmann, B.  
2011
  - **A Continuous-Time, Jitter Insensitive  $\Sigma\Delta$  Modulator Using a Digitally Linearized Gm-C Integrator with Embedded SC Feedback DAC**  
Kim, D., Matsuura, T., Murmann, B.  
2011
  - **A 96-Channel Full Data Rate Direct Neural Interface in 0.13 $\mu$ m CMOS**  
Walker, R. M., Gao, H., Nuyujukian, P., Makinwa, K., Shenoy, K. V., Meng, T., Murmann, B.  
2011
  - **A 6.7-ENOB, 500-MS/s, 5.1-mW Dynamic Pipeline ADC in 65-nm SOI CMOS**  
Nguyen, R., Raynaud, C., Cathelin, A., Murmann, B.  
2011
  - **Background Calibration of Timing Skew in Time-Interleaved A/D Converters** *International Conference on Sampling Theory and Applications (SampTA)*  
Murmann, B., El-Chammas, M.  
2011
  - **Introduction to the Special Issue on the 2010 IEEE International Solid-State Circuits Conference** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Cho, G., Murmann, B., Halonen, K., Gharpurey, R., Sim, J.  
2010; 45 (12): 2505-2509
  - **Full-Swing and High-Gain Pentacene Logic Circuits on Plastic Substrate** *IEEE ELECTRON DEVICE LETTERS*  
Jeon, J., Murmann, B., Bao, Z.  
2010; 31 (12): 1488-1490
  - **A 3-V, 6-Bit C-2C Digital-to-Analog Converter Using Complementary Organic Thin-Film Transistors on Glass** *IEEE JOURNAL OF SOLID-STATE CIRCUITS*  
Xiong, W., Guo, Y., Zschieschang, U., Klauk, H., Murmann, B.  
2010; 45 (7): 1380-1388
  - **The Design of Fast-Settling Three-Stage Amplifiers Using the Open-Loop Damping Factor as a Design Parameter** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*  
Nguyen, R., Murmann, B.  
2010; 57 (6): 1244-1254
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