

# Sebastian Hoyos

Email:hoyos@ece.tamu.edu ; <http://www.ee.tamu.edu/~hoyos/>

## Professional Preparation

Pontificia Universidad Javeriana, Electronics, Bachelor in Electronic Engineering - 2000  
University of Delaware, Signal Processing Applications, Master in Electrical Engineering - 2002  
University of Delaware, Signal Processing Applications, Ph.D. in Electrical Engineering - 2004  
University of California at Berkeley, Integrated Circuit Design, Postdoctoral Researcher - 2004 – 2006

## Appointments

Fall 2012 – Present	<b>Associate Professor</b> , Texas A&M University, Department of Electrical and Computer Engineering, College Station, TX
Fall 2006 – Summer 2012	<b>Assistant Professor</b> , Texas A&M University, Department of Electrical and Computer Engineering, College Station, TX
October 2004 – August 2006	<b>Postdoctoral Researcher</b> , Berkeley Wireless Research Center, Dept. of EECS, University of California at Berkeley, CA
Summer 2004	<b>Consultant</b> , Advanced Wireless Research Division, Conexant Systems Inc., Red Bank, NJ
Spring 2004	<b>Instructor</b> , Department of Electrical and Computer Engineering, University of Delaware, Newark, DE
2000-2004	<b>Researcher</b> , Department of Electrical and Computer Engineering, University of Delaware, Newark, DE
1999-2000	<b>Technical Supervisor</b> , Lucent Technologies Inc., Bogota, Colombia
1998-2000	<b>Instructor</b> , Pontificia Universidad Javeriana, Bogota, Colombia

## Publications

- [1] X. Chen, E.A. Sobhy, Z. Yu, S. Hoyos, J. Silva-Martinez, S. Palermo, and B.M. Sadler, "A Sub-Nyquist Rate Compressive Sensing Data Acquisition Front-end," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, Vol. 2, No. 3, pp. 482-492, Sept. 2012.
- [2] R. Ahmed, D.L. Aristizabal-Ramirez, and S. Hoyos, "Sensitivity Analysis of Continuous-Time Delta-Sigma ADCs to Out-of-Band Blockers in Future SAW-Less Multi-Standard Wireless Receivers," *IEEE Transactions on Circuits and Systems I*, Vol. 59, No. 9, pp. 1894-1905, Sept. 2012.
- [3] S. Hoyos, S. Pentakota, Z. Yu, E. Sobhy, X. Chen, R. Saad, S. Palermo, and J. Silva-Martinez, "Clock-Jitter Tolerant Wideband Receivers: An Optimized Multi-Channel Filter-Bank Approach," *IEEE Transactions on Circuits and Systems I*, Vol. 58, No. 2, pp. 253 – 263, Feb. 2011.
- [4] X. Chen, Z. Yu, S. Hoyos, B. M. Sadler, and J. Silva-Martinez, "A Sub-Nyquist Rate Sampling Receiver Exploiting Compressive Sensing," *IEEE Transactions on Circuits and Systems I*, Vol. 58, Issue 3, pp. 507-520, Mar. 2011.
- [5] C.-Y. Lu, F. Silva-Rivas, P. Kode, J. Silva-Martinez, S. Hoyos, "A 6th-order 200MHz IF Bandpass Sigma-Delta Modulator With over 68dB SNDR in 10MHz Bandwidth", *IEEE Journal of Solid State Circuits*, vol. 45, No. 6, pp. 1122-1136, June 2010.
- [6] S. Hoyos, "Compressive Spectrum Sensing for Cognitive Radios", *Proceedings of IEEE STSIVA 2009*, Sept. 9-11. (**Best paper award**).
- [7] R. Saad, E. A. Sobhy, and S. Hoyos, "A 384-MHz Continuous-Time Delta-Sigma Modulator using a Hybrid Feedback DAC Based on Spectral Shaping of Jitter Induced Errors," *Proceedings of SRC TECHCON*, Austin TX, September 2011. (**Best Paper Award**)
- [8] J. Kim, S. Hoyos, and J. Silva-Martinez, "Wideband Common-Gate CMOS LNA Employing Dual Negative Feedback with Simultaneous Noise, Gain, and Bandwidth Optimization," *IEEE Transactions On Microwave Theory And Techniques*, Vol. 58, No. 9, pp. 2340-2351, Sept. 2010.
- [9] C.-Y. Lu, F. Silva-Rivas, P. Kode, J. Silva-Martinez, and S. Hoyos, "A 6th-order 200MHz IF Bandpass Sigma-Delta Modulator With over 68dB SNDR in 10MHz Bandwidth," *IEEE Journal of Solid State Circuits*, Vol. 45, No. 6, pp. 1122-1136, June 2010.
- [10] S. Hoyos, B. M. Sadler, and G. R. Arce, "Mono-bit digital receivers for ultra-wideband communications," *IEEE Transactions Letters on Wireless Communications*, Vol. 4, No. 4, July 2005 Pages:1337-1344.

## Synergistic Activities

### Recent National and International Presentations:

**“Sub-Nyquist Rate Receivers via Compressive Sensing: Theory, State-of-the-Art and Challenges”**, presentation in the Society of Hispanic Professional Engineers Conference (SHPE), Nov. 17, 2012.

**“A Sub-Nyquist Rate Sampling Receiver Exploiting Compressive Sensing,”** Tutorial presentation in the *IEEE Signal Processing Summer School: Compressive Sensing and MIMO Signal Processing Systems*, Hsinchu, Taiwan, July 2-6, 2012.

**New Course Development: Data Converters:** Taught once a year at the Analog and Mixed-Signal Center at the Texas A&M University (many visual supplements for the course are available online at <http://www.ee.tamu.edu/~hoyos/>). This graduate level course focuses on filters, analog-to-digital converters (ADCs) and digital-to-analog converters (DACs) which represent fundamental mixed-signal building blocks of integrated circuits widely used in signal processing, communications and networks applications. Besides explaining the details of the classical systems and circuit structures used for the design of these blocks, this course also introduces some advanced signal processing techniques that are currently pushing the performance envelope of the mixed-signal interfaces.

**New Course Development: Advanced Mixed-Signal Interfaces:** This course introduces emerging and state of art mixed-signal techniques for the design of narrowband, wideband and ultra-wideband transmitters and receivers. The course teaches how the emerging services are demanding highly flexible, programmable and scalable architectures to be able to cope with a large number of applications including several communications standards. Additionally, the course addresses some of the topologies proposed to realize concepts like Software-Defined-Radios, Cognitive-Radios and Magnetic Resonance Imaging Receiver and Transmitters.

**Participation of underrepresented students in science:** We have made some important progress toward creating incentives for underrepresented students to join our research center as graduate students. In general, the Texas A&M University has a continuing campaign to create the right venues to foster the representation of students from minority groups in both our graduate and undergraduate programs, as well as the representation of local American students in our graduate programs.

**Participation in Technical Committees:** Technical Committee Member of the Sixth, Seventh and Eight, IEEE Dallas Circuits and Systems Workshop. (<http://ewh.ieee.org/soc/cas/dallas/wks2009/cfp.pdf>)

**Reviewer of IEEE Transactions Journals and Conferences Papers:** at least 1 journal paper review each month plus several conference papers a year.

**Postdoctoral Advisor:** Prof. Borivoje Nikolic, University of California at Berkeley

**Graduate Advisor:** Prof. Gonzalo R. Arce, University of Delaware

**Postdoctoral Sponsor and Co-Author:** Dr. Brian M. Sadler, Army Research Laboratory

**Students Advised (1):** Jun Zhou, Ayush Ruia

**Former Students (10):** Ehab Sobhy (now with Qualcomm), Ramy Saad (now with Qualcomm), Mario Ramirez (now with Intel), Xi Chen (now with Broadcom Inc.), Zhizhuan Yu (now with Texas Instruments Inc/Srikanth Pentakota (now with Silicon Labs), Vikram Gigoo, and Hemant Raghavan (now with Qualcomm). Pradeep Kotte (MS, now with Linear Technologies Inc.), Mandar Kulkarni (MS, now with Cactus Custom Analog Design Inc).