

Carlos Saavedra

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Education

Ph.D.	Cornell University	1998
M.Sc.	Cornell University	1995
B.Sc.	University of Virginia	1993

Academic Appointments, Queen's University

Department Head	2020
Professor	2013
Associate Professor	2006–2013
Assistant Professor	2000–2006

Visiting Appointments

Visiting Professor, Universidade Federal do Rio Grande do Sul, Brazil	Spring 2014
Visiting Professor, Tecnum, University of Navarra, San Sebastián, Spain	Fall 2013
Visiting Scientist, Universiteit Twente, Enschede, The Netherlands	Fall 2006

Private Sector

Senior Millimeter-Wave Engineer, Millitech Corp., South Deerfield, MA, USA	1998–2000
Intern, Eastman Kodak Company, Billerica, MA, USA	Summer 1992
Intern, GE Astro Space (now Lockheed-Martin), Valley Forge, PA, USA	Summer 1991

Awards & Recognitions

- NSERC Discovery Accelerator Supplement Award 2011–2014
- Excellence in Teaching Award, Electrical Engineering, Queen's University 2013
- Excellence in Teaching Award, Electrical Engineering, Queen's University 2012
- Co-author, Best Student Paper at the IEEE SiRF Conference 2009
- Excellence in Teaching Award, Electrical Engineering, Queen's University 2001
- National Science Foundation Fellowship 1994–1997
- General Electric Foundation Graduate Fellowship (Cornell University) 1993–1994
- Eastman Kodak Company Scholar (University of Virginia) 1991–1993

Funding agency service

- National Science Foundation (USA), ECCS grants review panel member 2017–2018
- National Science Foundation (USA), CAREER grants review panel member 2016
- Co-Chair, NSERC Discovery Grants Evaluation Group 1510 2012–2014
- Netherlands Organisation for Scientific Research, reviewer
- Canada Foundation for Innovation (CFI), reviewer

Editorships

- Guest Editor, IEEE Open Journal on Antennas and Propagation 2019–2020
- Associate Editor, IEEE Transactions on Microwave Theory and Techniques 2013–2017
- Guest Editor, IEEE Microwave Magazine, 100 Years of Mixer Technology 2013

Leadership Positions

- Chair, IEEE AP/MTT-S Kingston Joint Chapter 2015–2017
- Chair, IEEE MTT-22 Committee on Signal Gen. & Freq. Conversion 2010–2013
- Vice-Chair, IEEE MTT-22 Committee on Signal Gen. & Freq. Conversion 2009–2010
- Director, Professional Engineers Ontario (PEO) Kingston Chapter 2011–2012
- Vice-Chair, IEEE Kingston Section 2002–2004

Professional Memberships

- Professional Engineers Ontario (License # 100064726)
- International Union of Radio Science (URSI)
- European Microwave Association (EuMA)

Peer-Reviewed Journal Papers

1. Ian Goode and C. E. Saavedra, “Millimeter-Wave Beam-Steering Antenna using a Fluidically Reconfigurable Lens,” *IEEE Transactions on Antennas and Propagation*, in press.
2. H. Banting and C. E. Saavedra, “Dielectric Spectroscopy of Fluids and Polymers for Microwave Microfluidic Circuits and Antennas,” *IEEE Transactions on Microwave Theory and Techniques*, in press.
3. A. Arbelaez, J. L. Olvera, A. Corona-Chavez and C. E. Saavedra, “Compact closed-loop resonator filters with wide spurious free band and extended common-mode noise suppression,” *IET Microwaves, Antennas & Propagation*, in press.
4. A. Singh and C. E. Saavedra, “A Wide-Bandwidth Inverted-F stub fed Hybrid Loop Antenna for 5G Sub-6 GHz Massive MIMO Enabled Handsets,” *IET Microwaves, Antennas & Propagation*, vol. 14, no. 7. pp. 677-683, 2020.
5. A. Arbelaez, I. J. Goode, J. Gomez-Cruz, C. Escobedo and C. E. Saavedra, “Liquid Metal Reconfigurable Patch Antenna for Linear, RH and LH Circular Polarization with Frequency Tuning,” *IEEE Canadian Journal of Electrical and Computer Engineering*, vol. 43, no. 4, pp. 218–223, 2020.

6. Ian Goode and C. E. Saavedra, "Ultra-Wideband Fluidically Steered Antipodal Vivaldi Antenna Array," *Microwave and Optical Technology Letters*, in press.
7. A. Singh and C. E. Saavedra, "Fluidically Reconfigurable MIMO Antenna With Pattern Diversity for Sub-6 GHz 5G Relay Node Applications," *IEEE Canadian Journal of Electrical and Computer Engineering*, vol. 42, no. 2, pp. 92-99, 2020.
8. A. Singh, I. Goode and C. E. Saavedra, "A Multi-State Frequency Reconfigurable Monopole Antenna using Fluidic Channels," *IEEE Antennas and Wireless Propagation Letters*, vol. 18, no. 5, pp. 856-860, 2019.
9. M. D. Brown and C. E. Saavedra, "Tunable Branchline Coupler Using Microfluidic Channels," *IEEE Microwave and Wireless Components Letters*, vol. 29, no. 3, pp. 207-209, 2019.
10. Hao Li and C. E. Saavedra, "Linearization of Active Downconversion Mixers at the IF using Feedforward Cancellation," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 66, no. 4, pp. 1620-1631, 2019.
11. F. D. Baumgratz, C. E. Saavedra, F. Tavernier, M. Steyaert, S. Bampi, "A Wideband Low-Noise Variable-Gain Amplifier with a 3.4 dB NF and up to 45 dB gain tuning range in 130 nm CMOS," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 66, no. 7, pp. 1104-1108, 2019.
12. Hao Li, A. M. El-Gabaly and C. E. Saavedra, "A Low-Power Low-Noise Decade-Bandwidth Switched Transconductor Mixer with AC-Coupled LO Buffers," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 65, no. 2, pp. 510-521, 2018.
13. S. E. Whitehall and C. E. Saavedra, "A Compact 640 μ W FM Ultra-Wideband Transmitter," *IET Circuits, Devices and Systems*, vol. 12, no. 3, pp. 226-232, 2018.
14. S. E. Whitehall and C. E. Saavedra, "Low Power Low Data Rate FM-UWB Receiver Front End," *IET Circuits, Devices and Systems*, vol. 12, no. 4, pp. 335-340, 2018.
15. F. D. Baumgratz, H. Li, F. Tavernier, S. Bampi and C. E. Saavedra, "A 0.4-3.3 GHz Low-Noise Variable Gain Amplifier with 35 dB tuning range, 4.9 dB NF, and 40 dBm IIP2", *Analog Integrated Circuits and Signal Processing*, vol. 94, no. 1, pp. 9-17, 2018.
16. A. Arbelaez-Nieto, A. Corona-Chavez, J. L. Olvera-Cervantes and C. E. Saavedra, "Balanced Liquid Metal Reconfigurable Microstrip Filter," *Journal of Electromagnetic Waves and Applications*, vol. 31, no. 14, pp. 1453-1466, 2017.
17. D. del Rio, I. Gurutzeaga, A. Rezola, J. F. Sevillano, I. Velez, S. Gunnarson, N. Tamir, C. E. Saavedra, J. L. Gonzalez-Jimenez, A. Siligaris, C. Dehos, R. Berenguer, "A Wideband and High-Linearity E-Band Transmitter Integrated in a 55 nm SiGe Technology for Backhaul Point-to-Point 10 Gbps Links", *IEEE Transactions on Microwave Theory and Techniques*, vol. 65, no. 8, pp. 2990-3001, 2017.
18. S. Whitehall and C. E. Saavedra, "1.5 μ W Wake-Up-Receiver for Biotelemetry Applications", *Microwave and Optical Technology Letters*, vol. 59, no. 2, pp. 2884-2990, 2017.
19. M. Mohsenpour and C. E. Saavedra, "Method to Improve the Linearity of Active Commutating Mixers using Dynamic Current Injection," *IEEE Transactions on Microwave Theory and Techniques*, vol. 64, no. 12, pp. 4624-4631, Dec. 2016.

20. M. Mohsenpour and C. E. Saavedra, "Variable 360° Vector-Sum Phase Shifter with Coarse and Fine Vector-Scaling," *IEEE Transactions on Microwave Theory and Techniques*, v. 64, n. 7, p. 2113-2120, 2016.
21. S. Mondal, J. Xu and C. E. Saavedra, "Digitally assisted CMOS mixer with tight conversion gain flatness," *Electronics Letters*, vol. 51, no. 25, pp. 2119-2121, 2015.
22. F. Jiang and C. E. Saavedra, "Co-Design of Mixer-VGA Downconverter Blocks," *IEEE Canadian Journal of Electrical and Computer Engineering*, vol. 38, no. 3, pp. 199-203, 2015.
23. A. Corona Chavez, J. L. Olvera Cervantes, C. E. Saavedra, "Balanced Filter with Parallel Resonances for Very Wide Band Common Mode Rejection", *Journal of Electromagnetic Waves and Applications*, vol. 29, no. 8, pp. 1060-1067, 2015.
24. A. M. El-Gabaly and C. E. Saavedra, "A 3-10 GHz 13 pJ/pulse Dual BPSK/QPSK Pulse Modulator Based on Harmonic Injection Locking," *IEEE Transactions on Microwave Theory and Techniques*, vol. 62, no. 12, pp. 3476-3484, 2014.
25. D. Stewart and C. E. Saavedra, "Extending the bandwidth of a low-noise amplifier through digital assist," *Electronics Letters*, vol. 50, no. 7, p. 528-530, 2014.
26. A. M. El-Gabaly , D. Stewart and C. E. Saavedra, "2-Watt Broadband GaN Power Amplifier RFIC using the f_T Doubling Technique and Distortion Cancellation," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 1, pp. 525-532, 2013.
27. Shan He and C. E. Saavedra, "Design of a Low-Voltage and Low-Distortion Mixer Through Volterra Series Analysis," *IEEE Transactions on Microwave Theory and Techniques*, vol. 61, no. 1, pp. 177-184, 2013.
28. Wen Li and C. E. Saavedra, "A Stand-Alone Distortion-Cancelling Cell for Microwave Amplifiers," *IEEE Microwave and Wireless Component Letters*, vol. 23, no. 4, pp. 205-207, 2013.
29. C. E. Saavedra, B. R. Jackson and S. S. K. Ho, "Self-Oscillating Mixers", *IEEE Microwave Magazine*, vol. 14, no. 6, pp. 40-49, 2013.
30. M. Donelli, C. E. Saavedra and M. Rukanuzzaman, "A Methodology for the Design of Microwave Systems and Circuits using an Evolutionary Algorithm," *Progress in Electromagnetics Research Letters*, vol. 31, pp. 129-141, 2013.
31. M. Donelli, C. E. Saavedra and M. Rukanuzzaman, "Design and Optimization of a Broadband X-Band Bidirectional Amplifier", *Microwave and Optical Technology Letters*, vol. 55, no. 8, pp. 1730-1735, 2013.
32. A. M. El-Gabaly and C. E. Saavedra, "An Energy-Efficient Tunable Pulse Generator for 3.1–10.6 GHz UWB Applications Using a Variable Attenuator for Pulse Shaping" *International Journal of Circuit Theory and Applications (Wiley InterScience)*, vol. 41, no. 2, pp. 150-167, 2013.
33. Shan He and C. E. Saavedra, "An Ultra-Low-Voltage and Low-Power $\times 2$ Subharmonic Downconverter Mixer," *IEEE Transactions on Microwave Theory and Techniques*, vol. 60, no. 2, pp. 311-317, 2012.
34. Shan He , N. Akel and C. E. Saavedra, "Active Quasi-Circulator with High Port-to-Port Isolation and Small Area," *Electronics Letters*, vol. 48, no. 14, pp. 848-850, 2012.

35. J. Xu, C. E. Saavedra, G. Chen, "A Multi-Mode QAM Direct-Digital Modulator Based on Current Vector Sum", *Acta Electronica Sinica*, vol. 40, no. 1, pp. 40-46, 2012.
36. A. M. El-Gabaly and C. E. Saavedra, "Broadband Low Noise Amplifier with Fast Power Switching for 3.1-10.6 GHz Ultra-Wideband Applications," *IEEE Transactions on Microwave Theory and Techniques*, vol. 59, no. 12, pp. 3146-3153, December 2011.
37. A. M. El-Gabaly and C. E. Saavedra, "A Quadrature Pulse Generator for Short-Range UWB Vehicular Radar Applications Using a Pulsed Oscillator and a Variable Attenuator" *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 58, no. 10, pp. 2285-2295, 2011.
38. S. S. K. Ho and C. E. Saavedra, "A Low-Noise Self-Oscillating Mixer using a Balanced VCO Load," *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 58, no. 8, pp. 1705-1712, 2011.
39. J. Xu , C. E. Saavedra and G. Chen, "An Active Inductor-Based VCO with Wide Tuning Range and High DC-to-RF Power Efficiency," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 58, no. 8, pp. 462-466, 2011.
40. J. Xu , C. E. Saavedra and G. Chen, "A 12-GHz Bandwidth CMOS Mixer with Variable Conversion Gain Capability," *IEEE Microwave and Wireless Component Letters*, vol. 21, no. 10, pp. 565-567, 2011.
41. S. S. K. Ho and C. E. Saavedra, "A 5.4 GHz Fully Integrated Low-Noise Mixer," *Journal of Integrated Circuits and Systems*, Invited Paper, vol. 6, no. 1, pp. 18-24, 2011.
42. J. Xu , C. E. Saavedra and G. Chen, "A CMOS wideband front-end chip using direct RF sampling mixer with embedded discrete-time filtering," *Journal of Semiconductors*, vol. 32, no. 8, pp. 1-8, 2011.
43. A. M. El-Gabaly and C. E. Saavedra, "Wideband Variable Gain Amplifier with Noise Cancellation," *Electronics Letters*, Vol. 47, No. 2, pp. 116-117, 2011.
44. M. Wang and C. E. Saavedra, "Very Low Frequency Tunable Signal Generator for Neural and Cardiac Cell Stimulation," *International Journal of Electronics (Taylor & Francis)*, vol. 98, no. 9, pp. 1215-1227, 2011.
45. S. S. K. Ho and C. E. Saavedra, "A CMOS Broadband Low-Noise Mixer with Noise Cancellation," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 58, No. 5, pp. 1126-1132, May 2010.
46. Z. Ru, E. A. M. Klumperink, C. E. Saavedra and B. Nauta, "A Tunable 300-800 MHz RF-Sampling Receiver Achieving 60 dB Harmonic Rejection and 0.8 dB Minimum NF in 65 nm CMOS," *IEEE Journal of Solid-State Circuits*, Vol. 45, No. 5, pp. 967-978, May 2010.
47. B. R. Jackson and C. E. Saavedra, "A Dual-Band Self-Oscillating Mixer for C-Band and X-Band Applications," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 58, No. 2, pp. 318-323, February 2010.
48. You Zheng and C. E. Saavedra, "Full 360° Vector-Sum Phase Shifter for Microwave System Applications," *IEEE Transactions on Circuits and Systems I: Regular Papers*, Vol. 57, No. 4, pp. 752-758, April 2010.
49. C. E. Saavedra and S. S. K. Ho , "Optical Quasi-Circulator using Power Splitters and Optical Amplifiers," *IEEE Photonics Technology Letters*, Vol. 22, No. 9, 604-606, May 2010.

50. You Zheng and C. E. Saavedra, "A Variable Gain Amplifier using a Very High-Speed OTA," *Microwave and Optical Technology Letters*, Vol. 52, No. 5, pp. 1112-1116, 2010.
51. You Zheng and C. E. Saavedra, "Frequency Response Comparison of Two Active Inductors," *Progress in Electromagnetics Research Letters*, Vol. 13, pp. 113-119, 2010.
52. G. Yong and C. E. Saavedra, "A Wideband Quadrature Generator IC using a Varactor-Compensated Feedback Network," *Analog Integrated Circuits and Signal Processing*, Vol. 63, No. 2, pp. 161-167, 2010.
53. B. R. Jackson, F. Mazzilli and C. E. Saavedra, "A Frequency Tripler using a Subharmonic Mixer and Fundamental Cancellation," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 57, No. 5, pp. 1083-1090, May 2009.
54. You Zheng and C. E. Saavedra, "Active Quasi-Circulator MMIC using OTA's," *IEEE Microwave and Wireless Components Letters*, Vol. 19, No. 4, pp. 218-220, April 2009.
55. A. M. El-Gabaly and C. E. Saavedra, "Compact Low-Power 2.4 GHz QPSK Modulator in CMOS," *Microwave and Optical Technology Letters*, Vol. 51, No. 5, pp. 1344-1348, March 2009.
56. You Zheng and C. E. Saavedra, "Feedforward-Regulated Cascode OTA for Microwave Applications," *IEEE Transactions on Circuits and Systems I: Regular Papers*, Vol. 55, No. 12, December 2008.
57. B. R. Jackson and C. E. Saavedra, "A CMOS Ku-Band $4\times$ Subharmonic Mixer," *IEEE Journal of Solid-State Circuits*, Vol. 43, No. 6, pp. 1351-1359, June 2008.
58. You Zheng and C. E. Saavedra, "An Ultra-Compact CMOS Variable Phase-Shifter for 2.4 GHz ISM Applications," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 56, No. 6, pp. 1349-1354, June 2008.
59. You Zheng and C. E. Saavedra, "Ultra-Compact Active MMIC Bandpass Filter with a Wide Tuning Range," *Electronics Letters*, Vol. 44, No. 6, pp. 424-425, March 2008.
60. You Zheng and C. E. Saavedra, "A Broadband CMOS Frequency Tripler using a Third-Harmonic Enhanced Technique," *IEEE Journal of Solid-State Circuits*, Vol. 42, No. 10, pp. 2197-2203, 2007.
61. C. E. Saavedra and You Zheng, "Active Quasi-Circulator Realization with Gain Elements and Slow-Wave Couplers," *IET Microwaves, Antennas & Propagation*, Vol. 1, No. 5, pp. 1020-1023, 2007.
62. C. E. Saavedra, "Microstrip Multiplexer with Compact In-Line Feed Structure," *Microwave and Optical Technology Letters*, Vol. 49, No. 12, pp. 3128-3130, Dec. 2007.
63. B. R. Jackson and C. E. Saavedra, "A CMOS Subharmonic Mixer with Input and Output Active Baluns," *Microwave and Optical Technology Letters*, Vol. 48, No. 12, pp. 2472-2478, Dec. 2006.
64. C. E. Saavedra and B. R. Jackson, "Voltage-Variable Attenuator MMIC using Phase Cancellation," *IEE Proceedings Circuits, Devices, and Systems*, Vol. 153, No. 5, pp. 442-446, October 2006.
65. C. E. Saavedra and Y. Zheng, "Ring-Hybrid Microwave Voltage-Variable Attenuator using HFET Transistors," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 53, No. 7, pp. 2430-2434, July 2005.

66. C. E. Saavedra, "A Microwave Frequency Divider using an Inverter Ring and Transmission Gates," *IEEE Microwave and Wireless Components Letters*, Vol. 15, No. 5, pp. 330-332, May 2005.
67. B. R. Jackson and C. E. Saavedra, "2.4 GHz Direct-Digital Binary Phase Shift Keying Modulator using a MEMS Switch," *Electronics Letters*, Vol. 40, No. 24, pp. 1539-1540, Nov. 2004.
68. J. Fraresso and C. E. Saavedra, "Narrowband Bandpass Filter Exhibiting Harmonic Suppression," *Electronics Letters*, Vol. 39, No. 16, pp. 1189-1190, August 2003.
69. C. E. Saavedra, "A Microstrip Ring Resonator using Quarter Wave Couplers," *Electronics Letters*, Vol. 37, No. 11, pp.694-695, May 2001.
70. C. E. Saavedra, W. Wright, and R. C. Compton, "A Circuit, Waveguide, and Spatial Power Combiner for Millimeter-Wave Amplification," *IEEE Transactions on Microwave Theory and Techniques*, Vol. 47, pp. 605-613, May 1999.
71. C. E. Saavedra, W. Wright, K. Y. Hur, and R. C. Compton, "A Millimeter-Wave Quasi-Optical Amplifier Array using Inclined-Plane Horn Antennas," *IEEE Microwave and Guided Wave Letters*, Vol. 8, pp. 81-83, February 1998.

Papers in Refereed Conference Proceedings

72. M. Brown and C. E. Saavedra, "Reconfigurable Substrate Integrated Waveguide Circuits using Dielectric Fluids," *European Microwave Conference*, Utrecht, Netherlands, Jan. 2021.
73. H. Banting and C. E. Saavedra, "Aperture-Coupled Liquid Metal Tunable Dipole," *IEEE AP Symposium*, Montréal, Canada, July 2020.
74. Arcesio Arbelaez, Aditya Singh and C. E. Saavedra, "Frequency Tuning of Annular Slot Antenna using Liquid Metal Overlay Line," *IEEE AP Symposium*, Montréal, Canada, July 2020.
75. Aditya Singh and C. E. Saavedra, "Four-Element Polarization-Reconfigurable MIMO Antenna using Fluidics," *IEEE AP Symposium*, Montréal, Canada, July 2020.
76. Ian Goode and C. E. Saavedra, "20 GHz–23 GHz Antenna with Tri-State Output Beam-Steering using Fluidic Lens," *IEEE AP Symposium*, Montréal, Canada, July 2020.
77. G. Dragos, B. R. Jackson and C. E. Saavedra, "Millimeter-Wave Metallic Bull's-Eye Antenna with Wideband Broadside Radiation Characteristics," *IEEE AP Symposium*, Atlanta, USA, July 2019.
78. A. Singh and C. E. Saavedra, "A Frequency-Reconfigurable Water-Loaded Planar Monopole Antenna," *International Symposium on Antenna Technology and Applied Electromagnetics (ANTEM)*, Waterloo, Ontario, August 2018.
79. M. Abdallah and C. E. Saavedra, "Fluidically-Tuned Reflection Oscillator at C-Band," *ANTEM*, Waterloo, Ontario, August 2018.
80. M. Brown, I. Goode and C. E. Saavedra, "Lumped-Element Circuit Modelling of Microstrip Channels in Microstrip Transmission Lines," *IEEE NEWCAS Conference*, Montréal, Canada, June 2018.

81. Lin Wang and C. E. Saavedra, "28-31 GHz Bi-directional Amplifier for 5G Wireless Repeaters," *IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*, Montréal, Canada, Oct. 2017.
82. Ian Goode and C. E. Saavedra, "A Four Element Phased Patch Antenna Array Using Fluidic Phase Shifter," *URSI General Assembly and Scientific Symposium*, Montréal, Canada, Aug. 2017.
83. E. Merkley, B. R. Jackson, C. E. Saavedra and Y. M. M. Antar, "Wideband Switched Beam Antenna Array using Cavity-Backed Monopole Elements", *URSI General Assembly and Scientific Symposium*, Montréal, Canada, Aug. 2017.
84. E. Merkley, B. R. Jackson, C. E. Saavedra and Y. M. M. Antar, "A Compact Cavity-Backed Monopole Antenna For UWB Applications," *IEEE Antennas and Propagation Symposium*, San Diego, USA, July 2017.
85. H. Li, X. Yang and C. E. Saavedra, "A Feedforward Linearization Technique Implemented in IF Band for Active Down-Conversion Mixers," *IEEE RFIC Symposium*, Honolulu, Hawaii, June 2017.
86. M. Mohsenpour and C. E. Saavedra, "Highly Linear Reconfigurable Mixer Designed for Environment-Aware Receiver," *IEEE International Symposium on Circuits and Systems*, Baltimore, Maryland, May 2017.
87. A. Arbelaez, A. Corona-Chavez, J. L. Olvera-Cervantes and C. E. Saavedra, "Active CMOS Differential Filter with +3.5 dBm IP_{1dB} and +12.3 dBm IIP_3 ," *IEEE MTT-S LAMC*, Puerto Vallarta, Mexico, Dec. 2016.
88. A. M. El-Gabaly, H. Li and C. E. Saavedra, "A Decade-Bandwidth Low-Noise Mixer RFIC with a Distortion-Cancelling Output Amplifier", *IEEE Radio-Frequency Integration Technology Symposium*, Taipei, Taiwan, August 2016. (Invited Paper)
89. M. Mohsenpour and C. E. Saavedra, "Method to Improve the Linearity of Active Commutating Mixers using Dynamic Current Injection", *IEEE International Microwave Symposium*, pp. 1-3, San Francisco, USA, 2016.
90. A. P. Freundorfer, J. Chan and C. E. Saavedra, "A Compact 90 W Doherty Amplifier", *IEEE NEWCAS Conference*, pp. 1-4, Vancouver, Canada, 2016.
91. Hao Li and C. E. Saavedra, "Method to Improve the Conversion Gain Flatness of Transformer-Coupled Mixers," *IEEE SiRF Conference*, pp. 1-4, Austin, Texas, 2016.
92. D. Stewart and C. E. Saavedra, "A Linearity Enhancement Method for CMOS Mixers using Digital Assist," *IEEE International Conference on Ubiquitous Wireless Broadband (ICUWB)*, pp. 1-4, Montréal, Canada, Oct. 2015.
93. C. E. Saavedra, D. del Rio and R. Berenguer, "68-73 GHz Common Base HBT Amplifier in 55 nm SiGe Technology," *Global Symposium on Millimeter Waves*, pp. 1-3, Montréal, Canada, May 2015.
94. A. M. El-Gabaly and C. E. Saavedra, "A +18 dBm Broadband Power Amplifier RFIC with Distortion Cancellation," *IEEE SiRF Conference*, San Diego, California, 2015.
95. S. Mondal, J. Xu and C. E. Saavedra, "Multi-Scheme PSK and QAM Modulator through Vector Scaling and Summation," *IEEE International Conference on Electronics Circuits and Systems (ICECS)*, pp. 1-4, Marseille, France, Dec. 2014.

96. F. Jiang and C. E. Saavedra, "CMOS Subharmonic Downconverter using an LNNTA Front-End," *IEEE ICECS*, pp. 1-4, Marseille, France, Dec. 2014.
97. A. M. El-Gabaly and C. E. Saavedra, "A 3-10 GHz 13 pJ/pulse Dual BPSK/QPSK Pulse Modulator Based on Harmonic Injection Locking," *IEEE International Microwave Symposium*, pp. 1-4, Tampa, FL, USA, 2014.
98. S. E. Whitehall and C. E. Saavedra, "A Very High-Sensitivity CMOS Power Detector for High Data Rate Biotelemetry Applications," *IEEE NEWCAS Conference*, pp. 145-148, Trois-Rivieres, QC, Canada, 2014.
99. E. Torres-Rios and C. E. Saavedra, "A New Compact Nonlinear Model Improvement Methodology for GaN-HEMT," *IEEE LASCAS*, pp. 1-4, Santiago, Chile, 2014.
100. M. Wang, Shan He, C. E. Saavedra, "+14 dB Improvement in the IIP3 of a CMOS Active Mixer Through Distortion Cancellation," *IEEE MTT-S International Wireless Symp.*, pp. 1-4, Beijing, China, Apr. 2013.
101. You Zheng and C. E. Saavedra, "4.0–5.5 GHz Tunable Power Splitter RFIC using Active Inductors," *IEEE ICECS*, Seville, Spain, December 2012.
102. Shan He and C. E. Saavedra, "A Volterra-Series Approach for the Design of Low-Voltage CG-CS Active Baluns," *IEEE ICUBW*, Syracuse, NY, USA, pp. 168-172, Sept. 2012.
103. A. M. El-Gabaly and C. E. Saavedra, "2-Watt Broadband GaN Power Amplifier RFIC using the f_T Doubling Technique," *IEEE International Microwave Symposium*, Montréal, Canada, pp. 1-3, June 2012.
104. B. R. Jackson and C. E. Saavedra, "A Divide-by-Three Regenerative Frequency Divider using a Subharmonic Mixer," *NORCHIP Conference* (now called *IEEE NORCAS*), Lund, Sweden, November 2011.
105. J. Xu , C. E. Saavedra and G. Chen, "Noise Analysis of the CG-CS Low Noise Transconductance Amplifier," *IEEE Int. Conf. on Electron Devices and Solid-State Circuits*, Hong Kong, China, September 2011.
106. J. Xu , C. E. Saavedra and G. Chen, "5.4 GHz Reconfigurable Quadrature Amplitude Modulator using Very High-Speed OTA's", *IEEE International Microwave Symposium*, Baltimore, USA, June 2011.
107. M. Wang and C. E. Saavedra, "Reconfigurable Broadband Mixer with Variable Conversion Gain," *IEEE International Microwave Symposium*, Baltimore, USA, June 2011.
108. M. Wang and C. E. Saavedra, "Fully Monolithic Single-Sideband Mixer with Sideband Selection," *IEEE International Microwave Symposium*, Baltimore, USA, June 2011.
109. A. M. El-Gabaly and C. E. Saavedra, "A 24 GHz Quadrature Pulsed Oscillator for Short-Range UWB Vehicular Radar Applications" *IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 1283-1286, Rio de Janeiro, Brazil, May 2011.
110. Shan He and C. E. Saavedra, "A 19 - 26 GHz Balanced Amplifier in 130 nm CMOS Technology," *IEEE Sarnoff Symposium*, Princeton, New Jersey, May 2011.
111. S. S. K. Ho and C. E. Saavedra, "A 5.4 GHz Fully Integrated Low-Noise Mixer" *23rd Symposium on Integrated Circuits and Systems Design (SBCCI)*, pp. 14-17, São Paulo, Brazil, Sept. 2010.

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113. B. R. Jackson and C. E. Saavedra, "A CMOS Amplifier with Third-Order Intermodulation Distortion Cancellation," *IEEE Topical Meeting on Silicon Monolithic Integrated Circuits (SiRF Conference)*, pp. 217-220, San Diego, USA, 2009. **Best Student Paper Award recipient.**
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Patents, Technical Reports, Book Chapters

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Conference Steering Committees

- IEEE NEWCAS, Vancouver, Canada 2016
- IEEE International Microwave Symposium, Montréal, Canada 2010-2012

Technical Program Committees (TPCs and TPRCs)

- IEEE MTT-S International Microwave Symposium 2012–2020
- IEEE MTT-S Lat. Am. Microwave Conference 2016–2018
- IEEE LASCAS, Communications Track Chair 2018
- IEEE MTT-S IMaRC, RFIC Track Chair 2013
- Asia-Pacific Microwave Conference 2012, 2013
- IEEE RFIC Symposium 2008–2011

Session Chair/Co-Chair

- IEEE International Microwave Symposium, Tu1H Session 2018
- IEEE International Conference on Ubiquitous Wireless Broadband 2015
- IEEE International Microwave Symposium, TH3H Session 2013
- IEEE International Microwave Symposium, WMK Workshop 2012
- IEEE Radio-Frequency Integrated Circuits (RFIC) Symposium 2008
- URSI International Symposium on Signals, Systems and Electronics 2007
- IEEE Canadian Conference on Electrical and Computer Engineering 2004
- Int. Symp. Antenna Tech. and Applied Electromagnetics, Session Microstrips I 2002

Journal Reviewer

- IEEE Antennas and Wireless Propagation Letters
- IEEE Journal of Solid-State Circuits
- IEEE Journal of Radio Frequency Identification
- IEEE Microwave and Wireless Components Letters
- IEEE Transactions on Antennas and Propagation
- IEEE Transactions on Circuits and Systems I and II
- IEEE Transactions on Microwave Theory and Techniques
- IET Electronics Letters
- Microelectronics Journal (Elsevier)
- International Journal of Microwave and Wireless Technologies (Cambridge University Press)
- Analog Integrated Circuits and Signal Processing (Springer)

Conference Reviewer

- European Microwave Conference 2020
- IEEE Canadian Conference on Electrical and Computer Engineering 2020, 2011, 2008
- IEEE International Symposium on Circuits and Systems (ISCAS) 2012, 2008, 2005
- IEEE International Microwave Symposium Workshops 2012, 2009
- Workshop on Analog and Digital Electronic Design: 2011
- Asia-Pacific Microwave Conference (APMC) 2009
- Queen's Biennial Symposium on Communications 2008, 2006
- Microsystems and Nanoelectronics Research Conference 2008
- IEEE International Andean Region Conference (ANDESCON) 2006
- IEEE Int. Caribbean Conference on Devices, Circuits and Systems (ICCDCS) 2004

Invited Talks, Panel Appearances & Short Courses

1. "Intermodulation Distortion Mitigation in Microwave Power Amplifiers and Frequency Converters"
IEEE Solid-State Circuits Society Toronto Chapter, January 2017.
2. "Ultra Wideband Operational Transconductance Amplifiers: Principles and Applications"
Asia-Pacific Microwave Conf./IEEE IMArc, Workshop Presentation, Dec. 2016.
3. "Wideband Operational Transconductance Amplifiers for Gigahertz Applications"
CICESE (Ensenada) and CINVESTAV (Guadalajara), Mexico, April 2016.
4. "Fundamental and Harmonic Mode Self Oscillating Mixers"
Instituto Politecnico Nacional (IPN), Mexico City, Mexico, April 2016.
5. "Did Microsystems Replace Microelectronics?"
Panelist, IEEE NEWCAS Conference, Trois-Rivieres, Canada, June 2014.
6. "Noise Considerations in Microwave Operational Transconductance Amplifiers"
IEEE International Microwave Symposium Workshop Presentation, June 2014.
7. "Foundational Concepts for the Design of Mixer RFICs"
Universidade Federal de Santa Catarina, Florianopolis, Brazil, March 2014.
8. "On Dividing Less and Conquering More in the Design of Mixer RFICs"
University of Trento, Trento, Italy, November 2013.
9. "On Dividing Less and Conquering More in the Design of Mixer RFICs"
University of Cantabria, Santander, Spain, November 2013.
10. "GaN and CMOS Integrated Circuits for Microwave Systems"
Canadian Space Agency, Saint Hubert, QC, Canada, 14 August 2012.
11. "Low-noise Downconverters through Mixer-LNA Integration"
IEEE International Microwave Symposium Workshop Presentation, June 2012.

12. "Front-end CMOS RFIC's for Communications Applications"
Synergy Microwave, Paterson, NJ, USA, 19 April 2012.
13. "On taking a more unified design approach to the design of mixer RFIC's"
IEEE North Jersey MTT/AP/AES Chapter, Newark, New Jersey, USA, 18 April 2012.
14. "Wideband Operational Transconductance Amplifiers for Gigahertz Applications"
IEEE Southern Alberta Section, joint Solid-State Circuits Chapter and Circuits and Systems Chapter talk, Calgary, AB, Canada, April 1, 2011.
15. "Layout Techniques for IC Design"
Three-day short-course, CINVESTAV, Guadalajara, México, December 7–9, 2010.
16. "2-Watt Broadband GaN Power Amplifier" CMC Microsystems/National Research Council GaN Technology Workshop, Montréal, Canada, November 2010.
17. "CMOS RF Integrated Circuits for Broadband Wireless Communications"
IBM Microelectronics, Hopewell Junction, New York, USA, October 11, 2010.
18. "Front-End RF Integrated Circuits for Communications Applications"
University of São Paulo, São Paulo, Brazil, September, 2010.
19. "Advances in Mixer Design: Subharmonic Mixers and Applications"
Plenary Talk, Joint IEEE Col. Workshop on Electron Devices and Workshop on Circuits and Systems, Bogotá, Colombia, October 2009.
20. "CMOS Subharmonic Mixers and Applications"
IEEE International Microwave Symposium Workshop Presentation, June 2009.
21. "Frequency Multipliers: Design Techniques and Applications"
CMOS-ET Workshop, Vancouver, Canada, September 24, 2009.
22. "Advances in CMOS Subharmonic Mixers"
University of British Columbia, Vancouver, Canada, September 24, 2009
23. "Gigahertz Band Integrated Circuits for Microwave System Applications"
SiGe Semiconductor, Ottawa, Canada, April 21, 2009.
24. "Oscillation and Mixing Circuits using Harmonic Signals"
Communications Research Centre (CRC), Ottawa, Canada, February 20, 2008.
25. "Front-End Microwave Circuits and Systems"
Universiteit Twente, Enschede, The Netherlands, December 15, 2006.
26. "Microwave MEMS and CMOS Integrated Circuits for Communications and Telemetry"
Gennum Corporation, Burlington, Ontario, Canada, May 26, 2006.
27. "3 GHz to 9 GHz Silicon Germanium Frequency Tripler"
IBM Microelectronics, Hopewell Junction, NY, USA, December 14, 2004.