Carlos Saavedra, Ph.D., P.Eng.

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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–present
Professor	2013–present
Associate Professor	2006–2013
Assistant Professor	2000–2006

Visiting Appointments

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

Private Sector Experience

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

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

Funding agency service

- US National Science Foundation, ECCS grants review panel member 2017–2018
- US National Science Foundation, 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, reviewer

University Service

Department of Electrical and Computer Engineering (ECE)

- Department Head 2020–present
- ECE Graduate Chair 2007–2010

Committees

- ECE Undergraduate Curriculum Committee member 2019–2020, 2011–2013
- ECE Microelectronics, Electromagnetics & Photonics Group Coord. 2018–2020
- ECE Appointments Committee member (elected) 2016–2019, 2009-2010
- ECE Distinguished Seminar Series Coordinator 2017–2018, 2015–2016
- Chair, ECE Undergraduate Curriculum Committee 2014–2015
- Chair, ECE Renewal, Tenure and Promotion Committee (elected) 2012–2013
- Co-Chair, ECE CEAB Accreditation Report Committee 2010–2011
- ECE Renewal, Tenure and Promotion Committee member (elected) 2004–2005, 2003–2004

Faculty of Engineering and Applied Science

- Operations Committee 2019–2020
- Faculty Board Governance Review Committee (ad hoc) 2019–2020
- Engineering Design and Practice Sequence Committee 2018–2020
- First-Year Curriculum Review Committee 2015–2016

University Senate Committees

- University Promotions Committee 2019–2021
- Senate Advisory Research Committee 2019–2022

Publications

Journal Papers

1. M. D. Brown, C. E. Saavedra "Dual-Band SIW Metasurface Filtering Antenna With High Inter-Band Selectivity," *IEEE Transactions on Antennas and Propagation*, pp. 4705-4718, June 2024.
2. S. A. Andevari, J.-L. Olvera-Cervantes, C. E. Saavedra, "Two-Dimensional Inclinometer/Tilt Sensor With a Large Dynamic Range Utilizing Half-Wavelength Microstrip Resonator," *IEEE Access*, p.111169 - 111177, October 2023.
3. H. Banting, I. Goode, C. Gallardo-Flores, C. C. Colpitts, C. E. Saavedra, "Electromagnetic Deactivation Spectroscopy of Human Coronavirus 229E," *Scientific Reports*, 13(1):8886, 2023.
4. M. Brown and C. E. Saavedra, "Highly Selective and Compact Filtering Antennas Using Dual-Mode SIW Resonators," *IEEE Transactions on Antennas and Propagation*, vol. 71, no. 5, p. 3928-3937, May 2023.

5. H. Banting, C. E. Saavedra, "Bandwidth Enhancement of Low-Profile Metasurface Antenna Using Nonuniform Geometries," *IEEE Open Journal of Antennas and Propagation*, vol. 4, pp. 581-587, 2023.

6. I. Goode and C. E. Saavedra, "3D printed variable aperture horn with modular ridges," *Journal of Physics Communications*, 7(055004), May 2023.

7. I. Goode and C. E. Saavedra, "3D Printed Dually Symmetric Orthomode Transducer and Horn Antenna at X-Band," *IEEE Open Journal of Antennas and Propagation*, p. 383-391, April 2023.

8. S. A. Andevari, J.-L. Olvera-Cervantes and C. E. Saavedra, "Inclination Sensor with a Wide Angle Measurement Range using Half-Wavelength Microstrip Resonator," *IEEE Access*, p. 28699-28705, March 2023.

9. S. Andevari, J. L. Olvera-Cervantes, H. Lovera and C. E. Saavedra, "Dual-Band Uniaxial Dielectric Anisotropy Sensor Using Coupled-Line Resonators," *IEEE Access*, p. 7358-7368, Jan. 2023.

10. I. Goode and C. E. Saave dra, "3D Printed Dielectric Lens and Support Structure Mounted on Open-Ended W-Band Waveguide," *URSI Radio Science Letters*, vol. 4, p. 1-5, Dec. 2022.

11. M. Ruphuy and C. E. Saavedra, "Long-Slot Traveling-Wave Antenna Exhibiting Low Squint-Angle Variation over Frequency," *IEEE Transactions on Antennas and Propagation*, vol. 70, no. 9, pp. 7878-7884, Sep. 2022.

12. I. Goode and C. E. Saavedra, "3D Printed Linearly Polarized X-Band Conical Horn Antenna and Lens," *IEEE Open Journal of Antennas and Propagation*, p. 549-556, May 2022.

13. E. Carrasco, J. M. Gomez-Cruz, C. E. Saavedra and C. Escobedo, "Design of microfluidic reflectarray elements for multi-reconfiguration using liquid metal," *IEEE Open Journal of Antennas and Propagation*, p. 425-434, April 2022.

14. H.-N. Morales-Lovera, J.-L. Olvera-Cervantes, A.-E. Perez-Ramos, A. Corona-Chavez and C. E. Saavedra, "Microstrip Sensor and Methodology for the Determination of Complex Anisotropic Permittivity Using Perturbation Techniques," *Scientific Reports* 12:2205, 2022.

15. L. Herrera-Sepulveda, J. L. Olvera-Cervantes and C. E. Saavedra, "Multi-Frequency Coupled-Resonator Sensor for Dielectric Characterization of Liquids," *IEEE Transactions on Instrumentation and Measurement*, vol. 70, p. 1-7, 2021.

16. A. Singh and C. E. Saavedra, "Low-Profile CPW-PS Fed Magneto-Electric Antenna," *IEEE Antennas and Wireless Propagation Letters*, vol. 20, no. 12, p. 2471-2475, 2021.

17. A. Singh and C. E. Saavedra, "Fluidic Stub-Loaded Patch Antenna for Frequency-Tunable Polarization Reconfiguration," *IEEE Open Journal of Antennas and Propagation*, vol. 2, p. 362-369, 2021.

18. Ian Goode and C. E. Saavedra, "Millimeter-Wave Beam-Steering Antenna using a Fluidically Reconfigurable Lens," *IEEE Transactions on Antennas and Propagation*, vol. 69, no.2, p. 683-688, 2021.

19. 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*, vol. 69, no. 1, pp. 337-343, 2021.

20. M. Ruphuy and C. E. Saavedra, "3D-Printed Millimeter-Wave Beam-Steering Reflector using Dielectric Fluids," *J. Optical Society of America A*, vol. 38, no. 2, pp. 237-244, 2021.

21. 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,* vol. 14, no. 9. pp. 860-866, 2020.

22. 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.

23. 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.

24. Ian Goode and C. E. Saavedra, "Ultra-Wideband Fluidically Steered Antipodal Vivaldi Antenna Array," *Microwave and Optical Technology Lett.*, vol. 62, no. 9, pp. 2938-2944, 2020.

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. S. E. Whitehall and C. E. Saavedra, "A Compact 640 μW FM Ultra-Wideband Transmitter," *IET Circuits, Devices and Systems*, vol. 12, no. 3, pp. 226-232, 2018.

32. 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.

33. 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.

34. 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.

35. 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.

36. S. Whitehall and C. E. Saavedra, "1.5 μW Wake-Up-Receiver for Biotelemetry Applications", *Microwave and Optical Technology Letters*, vol. 59, no. 2, pp. 2884-2990, 2017.

37. 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.

38. 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.

39. 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.

40. 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.

41. 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.

42. 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.

43. 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.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. Shan He and C. E. Saavedra, "An Ultra-Low-Voltage and Low-Power ×2 Subharmonic Downconverter Mixer," *IEEE Transactions on Microwave Theory and Techniques*, vol. 60, no. 2, pp. 311-317, 2012.

52. 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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.

61. 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.

62. 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.

63. 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.

64. 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.

65. B. R. Jackson and C. E. Saavedra, "A Dual-Band Self-Oscillating Mixer for C-Band and X-Band Applications," *IEEE Transcations on Microwave Theory and Techniques*, vol. 58, no. 2, pp. 318-323, February 2010.

66. 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.

67. 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.

68. 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.

69. You Zheng and C. E. Saavedra, "Frequency Response Comparison of Two Active Inductors," *Progress in Electromagnetics Research Letters*, vol. 13, pp. 113-119, 2010.

70. 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.

71. B. R. Jackson , F. Mazzilli and C. E. Saavedra, "A Frequency Tripler using a Subharmonic Mixer and Fundamental Cancellation," *IEEE Transcations on Microwave Theory and Techniques*, vol. 57, no. 5, pp. 1083-1090, May 2009.

72. 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.

73. 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.

74. 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.

75. B. R. Jackson and C. E. Saavedra, "A CMOS Ku-Band 4× Subharmonic Mixer," *IEEE Journal of Solid-State Circuits*, vol. 43, no. 6, pp. 1351-1359, June 2008.

76. You Zheng and C. E. Saavedra, "An Ultra-Compact CMOS Variable Phase-Shifter for 2.4 GHz ISM Applications," *IEEE Transcations on Microwave Theory and Techniques*, vol. 56, no. 6, pp. 1349-1354, June 2008.

77. 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.

78. 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.

79. 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.

80. 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.

81. 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.

82. 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.

83. C. E. Saavedra and Y. Zheng , "Ring-Hybrid Microwave Voltage-Variable Attenuator using HFET Transistors," *IEEE Transcations on Microwave Theory and Techniques*, vol. 53, no. 7, pp. 2430-2434, July 2005.

84. 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.

85. 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.

86. J. Fraresso and C. E. Saavedra, "Narrowband Bandpass Filter Exhibiting Harmonic Suppression," *Electronics Letters*, vol. 39, no. 16, pp. 1189-1190, August 2003.

87. C. E. Saavedra, "A Microstrip Ring Resonator using Quarter Wave Couplers," *Electronics Letters*, vol. 37, no. 11, pp.694-695, May 2001.

88. C. E. Saavedra, W. Wright, and R. C. Compton, "A Circuit, Waveguide, and Spatial Power Combiner for Millimeter-Wave Amplification," *IEEE Transcations on Microwave Theory and Techniques*, vol. 47, pp. 605-613, May 1999.

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Papers in Refereed Conference Proceedings

90. I. Goode, A. Singh, C. E. Saavedra, "Stainless Steel Laser-Sintered 3D Printed Corrugated Horn Antennas at Ka Band," *ICEAA-IEEE APWC*, Invited Paper, Venice, Italy, Oct. 2023.

91. H. Banting and C. E. Saavedra, "Simple Strategy for Multi-objective Management in Antenna Optimization," *IEEE Antennas and Propagation Symposium*, Portland, Oregon, 2023.

92. Aditya Singh and C. E. Saavedra, "X/Ku-band High-gain Integrated Lens MIMO Antenna Using CPW-fed Magnetoelectric dipoles," *URSI General Assembly and Scientific Symposium (GASS)*, Sapporo, Japan, August 2023.

93. A. Singh and C. E. Saavedra, "Compression Mount Connector-To-SICL Transition Optimization at Millimeter-Wave Frequencies," *IEEE Microwave, Antennas and Propagation Conference,* Bangalore, India, Dec. 2022.

94. A. Singh and C. E. Saavedra, "An SICL-Fed Compact Magnetoelectric Dipole Antenna for 5G Millimeter Wave Bands," *IEEE International Symposium on Phased Array Systems & Technology*, Waltham, Massachusetts, Oct. 2022.

95. I. Goode and C. E. Saavedra, "3D Printed X-Band Orthomode Transducer and Conical Waveguide Horn Antenna," *IEEE Canadian Conference on Electrical and Computer Engineering,* Halifax, Nova Scotia, Sept. 2022.

96. E. Carrasco, J. Gomez-Cruz, C. E. Saavedra, C. Escobedo, "A Microfluidic Approach for Implementing Liquid Metal Based Reconfigurable Reflectarray Antennas," *European Conference on Antennas and Propagation*, Madrid, Spain, 2022.

97. M. D. Brown and C. E. Saavedra, "Millimeter-Wave Quadruplet Filtering-Antenna," *IEEE Antennas and Propagation Symposium*, Singapore, Dec. 2021.

98. A. Singh and C. E. Saavedra, "Substrate Integrated Coaxial Line Fed Magneto-Electric Dipole Antenna for 5G," *IEEE Antennas and Propagation Symposium*, Singapore, Dec. 2021.

99. H. Banting and C. E. Saavedra, "Broadband Millimeter-Wave Feed Structure for Log-Periodic Toothed Antenna," *IEEE Antennas and Propagation Symposium*, Singapore, Dec. 2021.

100. Aditya Singh and C. E. Saavedra, "Wideband CPW-PS Feed for Millimeter Wave Magneto-Electric Dipole Antenna," *IEEE Antennas and Propagation Symposium*, Singapore, Dec. 2021.

101. A. Singh and C. E. Saavedra, "Millimeter-Wave Antenna Using Dipole and Loop Modes for Enhanced Bandwidth," *IEEE CONECCT*, Bangalore, India, Jul. 2021. **Best Paper Award**

102. A. L. Torres-Costa and C. E. Saavedra, "High-Output Current Gallium Nitride Transconductance Amplifier," *IEEE RFIT Symposium*, Taiwan, Aug. 2021. (Abstract, Invited)

103. Ian Goode and C. E. Saavedra, "3D Printed 18 GHz to 28 GHz Horn Antenna and Gradient Index of Refraction Lens," *URSI General Assembly and Scientific Symposium*, Rome, Italy, Aug. 2021.

104. M. D. Brown and C. E. Saavedra, "Reconfigurable Substrate Integrated Waveguide Circuits using Dielectric Fluids," *European Microwave Conference*, Utrecht, Netherlands, Jan. 2021.

105. M. D. Brown and C. E. Saavedra, "Frequency-Tunable Quasi-Elliptic Filter Using Liquid Metal," *IEEE Asia-Pacific Conference on Circuits and Systems,* pp. 1–4, Dec. 2020.

106. H. Banting and C. E. Saavedra, "Aperture-Coupled Liquid Metal Tunable Dipole," *IEEE AP Symposium,* Montréal, Canada, July 2020.

107. 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.

108. Aditya Singh and C. E. Saavedra, "Four-Element Polarization-Reconfigurable MIMO Antenna using Fluidics," *IEEE AP Symposium,* Montréal, Canada, July 2020.

109. 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.

110. 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.

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Invited Talks, Panel Appearances & Short Courses

1. "High-Output Current Gallium Nitride Transconductance Amplifier," IEEE Radio-Frequency Integration Technology (RFIT) Symposium, Taiwan, Aug. 2021.
2. "Active Circulators in Microwave and Millimeter-Wave Systems," IEEE LAEDC, April 2021.
3. "Microfluidic Circuits and Antennas: A New Frontier in Microwave and Millimeter-Wave Electronics," IEEE Solid-State Circuits and Electron Devices Joint South Brazil Chapter, Porto Alegre, Brazil, October 2020.
4. "Intermodulation Distortion Mitigation in Microwave Power Amplifiers and Frequency Converters," IEEE Solid-State Circuits Society Toronto Chapter, January 2017.
5. "Ultra Wideband Operational Transconductance Amplifiers: Principles and Applications" Asia-Pacific Microwave Conf./IEEE IMaRC, Workshop Presentation, Dec. 2016.
6. "Wideband Operational Transconductance Amplifiers for Gigahertz Applications" CICESE (Ensenada) and CINVESTAV (Guadalajara), Mexico, April 2016.
7. "Fundamental and Harmonic Mode Self Oscillating Mixers" Instituto Politecnico Nacional (IPN), Mexico City, Mexico, April 2016.

8. "Did Microsystems Replace Microelectronics?"
   Panelist, IEEE NEWCAS Conference, Trois-Rivieres, Canada, June 2014.

9. "Noise Considerations in Microwave Operational Transconductance Amplifiers"
   IEEE International Microwave Symposium Workshop Presentation, June 2014.

10. "Foundational Concepts for the Design of Mixer RFICs"
    Universidade Federal de Santa Catarina, Florianopolis, Brazil, March 2014.

11. "On Dividing Less and Conquering More in the Design of Mixer RFICs"
    University of Trento, Trento, Italy, November 2013.

12. "On Dividing Less and Conquering More in the Design of Mixer RFICs"
    University of Cantabria, Santander, Spain, November 2013.

13. "GaN and CMOS Integrated Circuits for Microwave Systems"
    Canadian Space Agency, Saint Hubert, QC, Canada, 14 August 2012.

14. "Low-noise Downconverters through Mixer-LNA Integration"
    IEEE International Microwave Symposium Workshop Presentation, June 2012.

15. "Front-end CMOS RFIC's for Communications Applications"
    Synergy Microwave, Paterson, NJ, USA, 19 April 2012.

16. "On taking a more unifed design approach to the design of mixer RFIC's"
    IEEE North Jersey MTT/AP/AES Chapter, Newark, New Jersey, USA, 18 April 2012.

17. "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.

18. "Layout Techniques for IC Design"
    Three-day short-course, CINVESTAV, Guadalajara, México, December 7−9, 2010.

19. "2-Watt Broadband GaN Power Amplifier" CMC Microsystems/National Research Council GaN Technology Workshop, Montréal, Canada, November 2010.

20. "CMOS RF Integrated Circuits for Broadband Wireless Communications"
    IBM Microelectronics, Hopewell Junction, New York, USA, October 11, 2010.

21. "Front-End RF Integrated Circuits for Communications Applications"
    University of São Paulo, São Paulo, Brazil, September, 2010.

22. "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.

23. "CMOS Subharmonic Mixers and Applications"
    IEEE International Microwave Symposium Workshop Presentation, June 2009.

24. "Frequency Multipliers: Design Techniques and Applications"
    CMOS-ET Workshop, Vancouver, Canada, September 24, 2009.

25. "Advances in CMOS Subharmonic Mixers"
    University of British Columbia, Vancouver, Canada, September 24, 2009

26. “Gigahertz Band Integrated Circuits for Microwave System Applications"
SiGe Semiconductor, Ottawa, Canada, April 21, 2009.

27. “Oscillation and Mixing Circuits using Harmonic Signals"
Communications Research Centre (CRC), Ottawa, Canada, February 20, 2008.

28. “Front-End Microwave Circuits and Systems"
Universiteit Twente, Enschede, The Netherlands, December 15, 2006.

29. “Microwave MEMS and CMOS Integrated Circuits for Communications and Telemetry"
Gennum Corporation, Burlington, Ontario, Canada, May 26, 2006.

30. “3 GHz to 9 GHz Silicon Germanium Frequency Tripler"
IBM Microelectronics, Hopewell Junction, NY, USA, December 14, 2004.