

# Curriculum Vitæ of Andrew C. M. Austin

## Academic Positions Held

02/2020–present: Senior Lecturer, Department of Electrical, Computer, and Software Engineering, The University of Auckland, Auckland, New Zealand.

11/2016–01/2020: Lecturer, Department of Electrical, Computer, and Software Engineering, The University of Auckland, Auckland, New Zealand.

4/2014–10/2016: Scientist, Telecommunications Circuits Laboratory, Institute of Electrical Engineering, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland.

9/2011–12/2013: Postdoctoral Fellow, Electromagnetics Group, Department of Electrical and Computer Engineering, University of Toronto, Toronto, Canada.

## Education

2007–2012: Doctor of Philosophy in Electrical and Electronic Engineering, The University of Auckland, Auckland, New Zealand.

2003–2007: Bachelor of Engineering (Electrical and Electronic) with First Class Honours, The University of Auckland, Auckland, New Zealand.

## Funding Attained

### External Funding

2020–2023: New Zealand Government, MBIE, Catalyst Strategic Fund (Primary Investigator), NZD\$ 500,000, “Small-satellite radar to monitor NZ’s oceans and coasts.”

2017–2019: New Zealand National Science Challenge: Resilience to Nature’s Challenges (Associate Investigator), NZD\$ 240,000, “Electricity distribution resilience framework informed by west coast alpine fault scenario.”

### Internal Funding

2019: Faculty of Engineering, Ideas Day Seed Funding (Primary Investigator), NZD\$ 10,000, “Development of metamaterials featuring broadband vibration attenuation”.

2018: University of Auckland, Food and Health Programme Seed Funding (Primary Investigator), NZD\$ 10,000, “Smart packaging for kiwifruit: Printable radio frequency sensors to monitor ripeness”.

2017–2019: University of Auckland, Faculty Research and Development Fund (Primary Investigator), NZD\$ 30,000, “Reconfigurable reflect-array antennas for indoor millimetre-wave systems”.

### Equipment Funding

2019: University of Auckland, CAPEX Equipment Fund (Primary Investigator), NZD\$ 17,000, for laboratory equipment to set up reconfigurable antennas for a millimetre-wave testbed.

2018: University of Auckland, CAPEX Equipment Fund (Primary Investigator), NZD\$ 96,000, for laboratory equipment to extend signal generation capabilities available in the Telecommunications Lab.

2016: University of Auckland, CAPEX Equipment Fund (Primary Investigator), NZD\$ 25,000, for equipment to set up a millimetre-wave testbed.

## Selected Publications

### Journal Papers

- A.C.M. Austin, “Uncertainty quantification in the finite-difference frequency-domain method using intrusive polynomial chaos”, submitted to *IEEE Trans. Antennas and Propagation*, Apr. 2020.
- G. Hu, A.C.M. Austin, V. Sorokin, and L. Tang, “Metamaterial Beam with graded local resonators for broadband vibration suppression”, submitted to *Mechanical Systems and Signal Processing*, Dec. 2019, *currently under review*.
- S. Wu, A.C.M. Austin, A. Ivoghlian, A. Bisht, and K.I-K. Wang, “Long range wide area network for agricultural wireless underground sensor networks”, submitted to *Journal of Ambient Intelligence and Humanized Computing*, Dec. 2019, *currently under review*.
- J11** A.C.M. Austin and M.J. Neve, “Efficient field reconstruction using compressive sensing”, *IEEE Trans. Antennas and Propagation*, vol. 66, no. 3, pp. 1624–1627, Mar. 2018.
- J10** S. Giovinnazzi, A.C.M. Austin, R. Ruiter, C. Foster, M. Nayerloo, N.-K. Nair and Liam Wotherpoon, “Resilience and fragility of the telecommunication network to seismic events: Evidence after the Kaikoura (New Zealand) earthquake sequence”, *Bulletin of the New Zealand Society for Earthquake Engineering*, vol. 50, no. 2, pp. 318–328, June 2017.
- J9** M. Yousefbei, A.C.M. Austin, J.R. Mosig, A.P. Burg and J. Perruisseau-Carrier, “Spatial multiplexing of QPSK signals with a single radio: Antenna design and over-the-air experiments”, *IEEE Trans. Antennas and Propagation*, vol. 64, no. 12, pp. 5131–5145, Dec. 2016.
- J8** A.C.M. Austin, “Wireless channel characterisation in burning buildings over 100–1000 MHz”, *IEEE Trans. Antennas and Propagation*, vol. 64, no. 7, pp. 3265–3269, July 2016.
- J7** A.C.M. Austin, “Performance estimation for indoor wireless systems using the FDTD method”, *Electronics Letters*, vol. 51, no. 17, pp. 1376–1378, Aug. 2015.
- J6** A. Balatsoukas-Stimming, A.C.M. Austin, P. Belanovic and A.P. Burg, “Baseband and RF hardware impairments in full-duplex wireless systems: experimental characterisation and suppression”, *EURASIP J. Wireless Communication Networks*, 2015:142, May 2015.
- J5** A.C.M. Austin and C.D. Sarris, “Efficient analysis of geometrical uncertainty in the FDTD method using polynomial chaos with application to microwave circuits”, *IEEE Trans. Microwave Theory and Techniques*, vol. 61, no. 12, pp. 4293–4301, Dec. 2013.
- J4** A.C.M. Austin, N. Sood, J. Siu and C.D. Sarris, “Application of polynomial chaos to quantify uncertainty in deterministic channel models”, *IEEE Trans. Antennas and Propagation*, vol. 61, no. 11, pp. 5754–5761, Nov. 2013.
- J3** P.S. Taylor, A.C.M. Austin, E.A. Parker, M.J. Neve, J.C. Batchelor, J.T.-P. Yiin, M. Leung, G.B. Rowe, A.G. Williamson and K.W. Sowerby, “Angular independent frequency selective surfaces for interference control in indoor wireless environments”, *Electronics Letters*, vol. 48, no. 2, pp. 61–62, Jan. 2012.
- J2** A.C.M. Austin, M.J. Neve and G.B. Rowe, “Modelling propagation in multi-floor buildings using the FDTD method”, *IEEE Trans. Antennas and Propagation*, vol. 59, no. 11, pp. 4239–4246, Nov. 2011.
- J1** A.C.M. Austin, M.J. Neve, G.B. Rowe and R.J. Pirkel, “Modelling the effects of nearby buildings on inter-floor radio-wave propagation”, *IEEE Trans. Antennas and Propagation*, vol. 57, no. 7, pp. 2155–2161, July 2009.

### Conference Papers

- C15** J. Krecke, M. Villano, A.C.M. Austin, J.E. Cater, and G. Krieger, “Design of SmallSat SAR for dedicated New Zealand applications”, accepted for publication in *European Conference on Synthetic Aperture Radar (EuSAR)*, June 2020.

- C14** S. Wu, K.I-K. Wang, A. Ivoghlian, A.C.M Austin, Z. Salcic, and X. Zhou, “LWS: A LoRaWAN wireless underground sensor network simulator for agriculture applications”, *IEEE International Conference on Ubiquitous Intelligence and Computing*, Aug. 2019.
- C13** A.C.M. Austin, D. Guven, M.J. Neve, and K.W. Sowerby, “60 GHz millimetre-wave channel characterisation for indoor office environments”, *2019 European Conference on Antennas and Propagation (EuCAP)*, April 2019.
- C12** A.C.M. Austin, M.J. Neve, and D. Guven, “Indoor millimetre wave channel measurements for 5G wireless systems”, *2018 European Conference on Antennas and Propagation (EuCAP)*, April 2018.
- C11** A.C.M. Austin, O. Afisiadis, and A.P. Burg, “Digital predistortion of hardware impairments for full-duplex transceivers”, *2017 IEEE Global Conference on Signal and Information Processing (Global-SIP)*, Nov. 2017.
- C10** O. Afisiadis, A.C.M. Austin, A. Balatsoukas-Stimming, and A.P. Burg, “Analysis of full-duplex wireless links with asymmetric capacity requirements”, *2017 Asilomar Conference on Signals, Systems, and Computers*, Oct. 2017.
- C9** A.C.M. Austin, A. Balatsoukas-Stimming and A.P. Burg, “Digital predistortion of power amplifier non-linearities for full-duplex transceivers”, *IEEE workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, July 2016.
- C8** O. Afisiadis, A.C.M. Austin, A. Balatsoukas-Stimming and A.P. Burg, “Sliding window spectrum sensing for full-duplex cognitive radios with low access-latency”, *2016-Spring IEEE Vehicular Technology Conference*, June 2016.
- C7** A.C.M. Austin, O. Afisiadis, A. Balatsoukas-Stimming and A.P. Burg, “Demonstration of concurrent spectrum sensing for cognitive radio using self-interference cancellation”, *ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc’15)*, pp. 407–408, June 2015.
- C6** A.C.M. Austin, N. Sood and C.D. Sarris, “Quantifying uncertainty in ray-tracing models of radiowave propagation using polynomial chaos”, *European Conference on Antennas and Propagation*, pp. 1768–1770 April 2014.
- C5** A.C.M. Austin and C.D. Sarris, “Efficient analysis of parameter uncertainty in FDTD models of microwave circuits using polynomial chaos”, *IEEE International Microwave Symposium*, June 2013.
- C4** A.C.M. Austin and C.D. Sarris, “Ultra-wideband interference modelling for indoor wireless channels using the FDTD method”, *URSI/IEEE Antennas and Propagation Symposium*, July 2012.
- C3** M.J. Neve, A.C.M. Austin and G.B. Rowe, “Electromagnetic engineering for communications in the built environment”, *European Conference on Antennas and Propagation*, March 2012 (Invited Paper).
- C2** A.C.M. Austin, M.J. Neve and G.B. Rowe, “Modelling interference for indoor wireless systems using the FDTD method”, *URSI/IEEE Antennas and Propagation Symposium*, June 2009.
- C1** A.C.M. Austin, M.J. Neve and G.B. Rowe, “Modelling inter-floor radio-wave propagation in office buildings”, *URSI/IEEE Antennas and Propagation Symposium*, July 2008.

## Professional Activities and Service

2018–present: Member of the Faculty Research Committee.

2018–present: Chair of the Electrical and Computer Engineering Staff-Student Consultative Committee.

2018: Member of the Technical Program Committee for the 2018 Australian Microwave Symposium.

2017–present: Counsellor for the University of Auckland IEEE Student Branch.

2016: Member of the Technical Program Committee (Antennas and Propagation Track) for the 2016-Spring and 2016-Fall IEEE Vehicular Technology Conferences.

2012: Member of the Technical Program Committee (Antennas and Propagation Track) for the 2012-Fall IEEE Vehicular Technology Conference.

2008–present: Reviewer for the following journals—IEEE Transactions on: Communications, Wireless Communications, Antennas and Propagation, and Microwave Theory and Techniques; and IET Proceedings on Microwave Antennas and Propagation.

## **Graduate Student Supervision**

### **Completed**

07/2017–07/2018: Damla Guven, Master of Engineering (1st Class Honours), “Implementation of a channel sounder for indoor millimetre wave systems at 60 GHz” (primary supervisor).

02/2018–02/2019: Shiyang Wu, Master of Engineering (2nd Class Honours, 1st Division), “Long range wide area network for wireless underground sensor networks” (co-supervisor).

### **In Progress**

10/2017–present: Dev Singh, Doctor of Philosophy, “Analysis of trust in heterogeneous wireless networks” (co-supervisor).

09/2018–present: Jan Krecke, Doctor of Philosophy, “Compact antennas for CubeSat synthetic aperture radar systems” (primary supervisor).

09/2018–present: Qingqing Dong, Doctor of Philosophy, “Self-interference cancellation in full-duplex systems” (primary supervisor).

04/2019–present: Priya Mittal, Doctor of Philosophy, “Passive reflectors for millimetre systems in indoor environments” (co-supervisor)

03/2020–present: Dylan Smith, Doctor of Philosophy, “Inverse electromagnetic scattering in the presence of uncertainty” (primary supervisor).

02/2018–02/2020: Farrukh Latif, Master of Engineering, “Resilience of communication systems to natural hazards” (primary supervisor)