John Garrett

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Profile

- I am a postdoc developing advanced millimetre- and submillimetre-wave receivers based on superconductor-insulator-superconductor (SIS) tunnel junctions.
- I have a strong technical background in:
  - **Electrical engineering**: RF design, simulation and testing
  - **Superconducting devices**: simulating high-frequency circuits, modelling quantum tunnelling effects, and hands-on experience operating cryogenic systems
  - **Software development**: building complex simulation software using Python & NumPy
- Interested in applying for positions beginning in late January 2019

Work Experience

Astrophysics, University of Oxford, Oxford, UK
Postdoctoral researcher Sep. 2018 – pres.

- Projects: Testing a new terahertz receiver system, simulating frequency multiplication in distributed SIS junctions, and developing a focal plane array at 230 GHz.
- Publishing the research from my DPhil.

Education

DPhil Astrophysics, University of Oxford, Oxford, UK 2014 – 2018

- Supervisor: Prof. Ghassan Yassin
- Thesis: *A 230 GHz Focal Plane Array Using a Wide IF Bandwidth SIS Receiver*
  - Developed a wide instantaneous bandwidth SIS mixer and a 1×4 focal plane array
  - Built a software package to simulate SIS mixer operation/performance (online: QMix)
  - Observed star formation in intermediate redshift galaxies using the IRAM 30 m telescope

MSc Electrical Engineering, University of Calgary, Calgary, Canada 2012 – 2014

- Supervisor: Dr. Elise Fear
- Thesis: *Average Dielectric Property Analysis of Non-Uniform Structures*
  - Developed a system to estimate the average dielectric properties of complex and non-uniform structures from microwave transmission measurements
- Graduate courses including letter grade: Antenna Design (A+), RFIC Design (A+), Analog IC Design (A), RF Microwave Passive Circuits (A+) [GPA: 4.0 / 4.0]

BSc Electrical Engineering, University of Alberta, Edmonton, Canada 2008 – 2012

- Capstone project: *Nanowire Metamaterials for Biosensing Applications*

Scholarships and Awards

- Clarendon Fund Scholarship (top 1.8% of applicants) 2014 – 2018
- New College Graduate Scholarship 2014 – 2017
- ALIS Sir James Lougheed Award of Distinction (Doctoral) 2015
- IEEE Antennas and Propagation Pre-Doctoral Research Award 2013
- Alberta Innovates Technology Futures (AITF) Scholarship 2012 – 2014

Teaching Assistant

- First Year Electromagnetics, University of Oxford 2016 – 2018
- Electromagnetic Waves and Applications, University of Calgary 2013 – 2014
- Electromagnetic Fields and Applications, University of Calgary 2013

Extra Curricular

- Stargazing at Oxford (public outreach programs) 2014 – pres.
- New College Rugby Football Club 2014 – pres.
- Sports Representative, New College MCR Committee 2015
- New College VIII's (rowing) 2014 – 2015
- Volunteer Ski Instructor, Canadian Association for Disabled Skiing 2012 – 2013