

EDUCATION

University of Chicago | Postdoctoral scholar | Chicago, IL **June 2019**
Associate Fellow at the Kavli Institute for Cosmological Physics (KICP)

- Leader of the simulation group within a small collaboration (~15 people) developing a class-leading next-generation detector for ultra-high energy cosmic rays, the Fluorescence detector Array of Single-pixel Telescopes (FAST).
- Design, development and installation of the detector, as well as analysis of initial R&D data.
- Work closely with both the large-scale anisotropy and atmospheric monitoring task-forces of the Pierre Auger Observatory (Auger — an international collaboration of ~400 scientists).
- Co-supervise graduate and undergraduate students on high-impact analyses within the Auger and FAST collaborations.
- Present results on behalf of both the FAST and Auger collaborations at large international conferences.
- Coordinator of the KICP's Life Long Learning program.
- Active member of the Gargoyle Consulting Club.

University of Adelaide | Adelaide, South Australia **June 2016**
Doctor of Philosophy (Ph.D.) in Physics

- Thesis title: "Systematic Effects in the Measurement of Vertical Aerosol Profiles at the Pierre Auger Observatory."
- Development of advanced laser-based techniques for determining the vertical distribution of atmospheric aerosols responsible for the attenuation and scattering of fluorescence light from extensive air showers.
- Significantly reduced the systematic uncertainty associated with measurements of the aerosol atmosphere.
- Algorithm now adopted by the collaboration for the reconstruction of all data recorded at Auger.
- Highly active member the atmospheric monitoring taskforce.
- Presentations at collaboration and analysis meetings.

University of Adelaide | Adelaide, South Australia **December 2012**
Master of Philosophy (M.Phil.) in Physics

- Thesis title: "Studies of Fluorescence Profile Reconstruction Systematics at the Pierre Auger Observatory."
- Systematic studies of the reconstruction of the Cherenkov light contaminating data measured with the Observatory's fluorescence detectors.

University of Adelaide | Adelaide, South Australia **December 2010**
B.Sc. (Space Science and Astrophysics)

- Majored in Physics and Theoretical Physics.
- GPA: 6.125/7.

Training: Modelling and algorithm development, Monte Carlo simulation, analysis pipeline development, statistical analysis of very large datasets, optimisation, supervision and teaching, public speaking and presentations, academic/paper writing.

Software: C++, ROOT data analysis framework, Python, MATLAB, PowerPoint, Excel, Microsoft Office suite.

EXPERIENCE

Associate Fellow | University of Chicago | Chicago, IL **July 2016 – June 2019**

- Large-scale anisotropy studies with data from the Pierre Auger Observatory, along with extensive work on characterisation of the atmosphere above the array — essential for the accurate reconstruction of air shower data, and by extension the quality of all of the collaboration's science output.
- Design, installation, and commissioning of the first prototype of the Fluorescence detector Array of Single-pixel Telescopes in Utah, USA.

Graduate Student | University of Adelaide | Adelaide, South Australia **January 2011 – June 2016**

- Studied systematic effects in the reconstruction of air shower data with the Pierre Auger Observatory's fluorescence detector.
- Developed a novel algorithm for the reconstruction of the aerosol optical depth above the array, taking into account the complicating effects of multiple-scattered laser light for the first time.

Research Assistant | Swinburne University | Melbourne, Australia **January 2010 – March 2011**

- Construction of Tully-Fisher relationships for a sample of ~25,000 galaxies from the Sloan Digital Sky Survey.
- Work published in the Monthly Notices of the Royal Astronomical Society.

Teaching Assistant | University of Adelaide | Adelaide, South Australia **January 2011 – June 2016**

- Lead lab instructor for introductory physics, astronomy and engineering courses.
- Tutor for introductory physics and mathematics courses.

Mathematics and Physics Tutor | Adelaide, South Australia **2009 – 2016**

- Worked both privately and for various tutoring businesses and schools.
- Developed and provided lessons for students of all ages (~5–60) and education levels on mathematics- and physics-related topics.

Showroom Coordinator | REPCO | Auckland, New Zealand **January 2007 – December 2007**

- Coordinated with head office on the layout of the retail showroom.
- Time-critical procurement of parts for trade and retail customers.

AWARDS AND SCHOLARSHIPS

Brazil-U.S. Physics Postdoc Visitation Grant	2019
Dean's Commendation for Doctoral Thesis Excellence	2016
Faculty of Sciences Divisional Scholarship	2013
Australian Postgraduate Award	2011
Centre for Astrophysics & Supercomputing Vacation Scholarship	2011 / 2010
Faculty of Sciences Outstanding Academic Achievement Award	2010 / 2009

OUTREACH ACTIVITIES

Life Long Learning Program Coordinator | KICP | University of Chicago

- Primary contact and organiser of the Kavli Institute for Cosmological Physics' Life Long Learning program.
- Public lecturer as part of KICP's Life Long Learning program, regularly presenting science lectures to older adults across Chicago.

SCIENTIFIC COLLABORATIONS AND SOCIETIES

American Physical Society	2017 – Present
Fluorescence detector Array of Single-pixel Telescopes Collaboration	2014 – Present
Pierre Auger Auger Collaboration	2012 – Present
Astronomical Society of Australia	January 2011 – December 2016
Australian Institute of Physics	January 2011 – December 2016
Institute for Photonics and Advanced Sensing	January 2011 – July 2016