

David Gozzard

School of Physics and Astrophysics, The University of Western Australia

Mobile: 0424 482 180, Email: david.gozzard@research.uwa.edu.au

www.physics.uwa.edu.au/research/postgrad-profiles?David+Gozzard

Professional Profile

- Highly developed research and analytical skills with a strong capacity to conduct independent research
- Proven ability to deconstruct problems and develop effective experiments and solutions, as demonstrated throughout Honours and PhD research
- Highly developed scientific communication skills through papers and technical reports, conference presentations, and science outreach
- Recognition for teaching excellence in astronomy and astrophysics and providing a high-quality learning experience
- High-level experience in fibre-optic technologies with particular application to radio astronomy, complemented by a good working knowledge of associated telescope systems

Academic Qualifications

- 2014 – Present **PhD**
School of Physics and Astrophysics, University of Western Australia (UWA)
Doctoral Thesis: “Stabilised Transfer of Time and Frequency for Space Science Applications”
- 2008 – 2013 **Bachelor of Science and Bachelor of Engineering (First Class Honours)**
Majors: Physics and Mechanical Engineering, UWA
Honours Thesis: “Development of a passive, variable-camber blade for use in linear wind generators”

Primary Research Areas

PhD research — Delivery of stabilized frequency references through both fibre-optic and free-space links for radio telescopes (the SKA) and the European Space Agency’s ACES mission. Future research — Ongoing work on SKA stabilized frequency references during the SKA construction phase, continue development of ACES mission infrastructure, and application of stabilized signal technology to satellite ground stations and other space systems.

Scholarships and Awards

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|------------|----------------------------------------------------------------------------|
| 2015, 2014 | Postgraduate Students’ Association Fieldwork/Data Collection Award |
| 2015 | Convocation Postgraduate Research Travel Award |
| 2015 | Postgraduate Teaching Internship Scheme |
| 2014 | UWA Three Minute Thesis — Runner Up |
| 2014 | Australian Postgraduate Award |
| 2012 | John and Robin de Laeter Tertiary Student Scholarship |
| 2012 | Physics Summer Vacation Scholarship |
| 2010 | CSBP Prize in Engineering Design |
| 2010 | Dreamfit Dreamcatcher Project Management Award |
| 2008 | Clough Limited Prize in Engineering: Introduction to Engineering Mechanics |

Academic Employment — Teaching and Research

- 2016 **Co-supervisor** for UWA Physics Honours student Simon Stobie
- 2015 - Present **Co-supervisor** for UWA School of Physics & Astrophysics summer research students G. Siow, S. Stobie, B. Stone and M. Sheard
- 2015 **Postgraduate Teaching Internship Scheme (UWA)**
- Attended workshops and seminars on effective tertiary teaching
 - Demonstrated use of evidence-based teaching in lectures and tutorials
 - Conducted research into the use and application of transformative teaching practices, presented at the Teaching and Learning Forum 2016
 - Ongoing research aimed at publication in late 2017
 - Contributed to the School Curriculum Executive
- 2013 – Present **Lecturer, Tutor and Laboratory Demonstrator**
School of Physics & Astrophysics, The University of Western Australia
- Responsibilities**
- Supervise and mark physics lab classes at first- and third-year levels
 - Lecturer/tutor of Modern Physics, Our Universe, and Our Solar System to first-year level students
- Achievements**
- Improved teaching skills to deliver a high-quality learning experience and worked to achieve consistent positive feedback from students

General Employment History and Industry Experience

- 2013 – 2014 **Summer Research Scholarship Student**
- 2012 – 2013 Frequency and Quantum Metrology Group, UWA
- Simulation of microwave and optical whispering gallery modes in cavities
 - Design and testing of fibre-optic radio frequency transfer systems
 - Point-to-multi-point stabilised optical frequency dissemination
 - Co-author of paper published in *Optics Letters*
- 2012 **Work Experience Intern**
Benchmark Engineering Pty Ltd
- Computer Aided Design of Components
 - CNC Machining of CAD models
 - Precision milling and turning of components
- 2012 **Shell Training Course UB00: Introduction to the Upstream Business**
Training course at The University of Western Australia delivered by Shell staff
- Oil and gas field prediction and appraisal from geological, petrophysical and well-bore data
- 2011 – 2012 **Mechanical Engineering Vacation Student**
Momentum Engineering Pty Ltd
- Developed reference design curves for pipe supports
 - Use of CAESAR, SPACEGASS and PROFIS software for structural analysis
 - Technical specification of valves
 - Organising meetings with vendors

Publications and technical reports

- Gozzard, DR** & Schediwy, SW (in preparation). “Simultaneous transfer of stabilized optical and microwave frequencies over fiber.”
- Gozzard, DR**, Schediwy, SW, Wallace, B, Gamatham, R & Grainge, K, (in preparation). “Stabilized radio-frequency transfer over 186 km of aerial fiber.”
- Gozzard, DR**, Schediwy, SW, Whitaker, R & Grainge, K, (submitted). “Simple stabilized radio-frequency transfer with optical phase actuation.” [arXiv:1705.06734]
- Gozzard, DR**, Schediwy, SW, Dodson, R, Rioja, M, Hill, M, Lennon, B, McFee, J, Mirtschin, P, Stevens, J & Grainge, K, (2017). “Astronomical verification of a stabilized frequency reference transfer system for the Square Kilometre Array,” accepted for publication by *The Astronomical Journal*. [arXiv:1704.08804]
- Gozzard, DR**, Schediwy, SW, Wallace, B, Gamatham, R & Grainge, K, (2017). “Characterization of optical frequency transfer over 154 km of aerial fiber,” *Optics Letters*, doc. ID 290228 (posted 15 May 2017, in press). [arXiv:1705.00709]
- Schediwy, SW, **Gozzard, DR**, Stobie, S, Malan, JA & Grainge, K, (2017). “Stabilized microwave-frequency transfer using optical phase sensing and actuation,” *Optics Letters*, 42(9), 1648-1651. doi: 10.1364/OL.38.001648 [arXiv:1705.01169]
- Gozzard, DR**, (2016). “Notes on calculating the relationship between coherence loss and Allan deviation,” Memo, SKA-TEL-SADT-0000619, Square Kilometre Array Organization.
- Gozzard, DR** & Schediwy, S, (2016). “STFR.FRQ.UWA astronomical verification,” Tech. Rep. SKA-TEL-SADT-0000524, Square Kilometre Array Organization.
- Schediwy, S & **Gozzard, DR**, (2015). “UWA South African SKA site long-haul overhead fibre field trial report,” Tech. Rep. SKA-TEL-SADT-0000109, Square Kilometre Array Organization.
- Gozzard, D** & Schediwy, S, (2015). “Stabilized frequency transfer for the Square Kilometre Array,” *Journal of the Royal Society of Western Australia*, 98(2), 143.
- Schediwy, SW, **Gozzard, D**, Baldwin, KGH, Orr, BJ, Warrington, RB, Aben, G & Luiten, AN, (2013). “High-precision optical-frequency dissemination on branching optical-fiber networks,” *Optics Letters*, 38(15), 2893-2896. doi: 10.1364/OL.38.002893

Recent conference presentations and colloquia

- ATNF Colloquium, CSIRO Sydney (Feb 2017), Stabilized frequency transfer for the SKA
- Bolton and Student Symposium, CSIRO Perth (Dec 2016)
- Pietro Baracchi Conference, CSIRO Perth (Nov 2016)
- Australian Institute of Physics Student Conference (WA), UWA Perth (Oct 2016)
- ICRAR-con, ICRAR Mandurah (Sept 2016)
- Royal Society of Western Australia Postgraduate Student Symposium, RSWA Perth (Oct 2015)

Professional memberships

- 2015 – Present The Optical Society (Student Member)
- 2015 – Present Australian Institute of Physics

Selected recent public talks and outreach

- To the Edge of the Universe — Pint of Science 2017
- Optical metrology — interview with the Vaguely Accurate science podcast
- Pluto: the oddball — invited talk on Pluto and New Horizons at Astrofest 2017
- The History of Radio Astronomy — invited talk for the Astronomical Society of WA
- Classroom Antarctica — demonstrated physics experiments on a tour flight to Antarctica
- From here to the edge of the universe — invited talk on the SKA at TEDxUWA 2016

- What is Sound? — video entry to the 2016 Flame Challenge, ranked in top 25 of entries
- Parliament house dinner — short presentation of my work to MPs at WA state parliament
- Gingin Science Festival — presentations on atomic clocks, signal stabilization and astrophysics
- Keeping clocks accurate — interview with The Naked Scientists podcast
- Perth Science Festival — presentations on atomic clocks, General Relativity and space science
- FameLab — competed in FameLab 2015, reached the Australian finals
- School visits (Perth Modern, Shenton College) — talked to year 10s about science and careers
- ABC Radio National Interview — short piece about my research for The Science Show
- 3-Minute Thesis — competed in 3MT in 2014, 2015 and 2016, UWA runner-up in 2014
- Space Capsule Centrifuge — exhibit displayed at the Gingin Gravity Discovery Centre

Extra-Curricular Activities

- 2016 – Present **Media Officer**
The Optical Society UWA Student Chapter
- Maintain the chapter’s online presence (Twitter, Facebook, website)
 - Assist with running of club events
- 2015 **Ordinary Committee Member**
Postgraduate Students’ Association, UWA
- Assisted with the running of club events
- 2012 **Mechanical Engineering Representative**
University Engineers’ Club Committee, UWA
- Assisted with running club events, open days, and industry presentations
- 2011 – 2012 **Volunteer**
Dreamfit Foundation
- Assisted with workshop maintenance and equipment installation
- 2003 – Present **Surf Life Saving**
Floreat Surf Life Saving Club
- Qualified to administer first aid, Bronze Medallion in aquatic rescue, Inflatable Rescue Boat Driver
 - 2010 Floreat Surf Life Saving Club award for outstanding contribution to lifesaving services
 - Assist with training of rescue boat crew and drivers

Referees

Doctor Sascha Schediwy,
University of Western Australia, PhD Supervisor
Tel: +61 8 6488 2814, email: sascha.schediwy@uwa.edu.au

Professor Michael Tobar,
University of Western Australia, PhD Supervisor
Tel: +61 8 6488 3915, email: michael.tobar@uwa.edu.au

Adjunct Associate Professor Marjan Zadnik
Curtin University, Teaching Mentor
Mob: 0438 241 193, email: m.zadnik@curtin.edu.au