

Adam Deller

Curriculum Vitae

John St
Hawthorn VIC 3122, Australia
☎ +61 490 247 944
☎ +61 3 9214 5307
FAX +61 3 9214 8797
✉ adeller@astro.swin.edu.au

Employment History

- 2022–current **Professor**, SWINBURNE UNIVERSITY, Hawthorn, Australia.
Ongoing position within the Centre for Astrophysics and Supercomputing.
- 2019–2021 **Associate Professor**, SWINBURNE UNIVERSITY, Hawthorn, Australia.
Ongoing position within the Centre for Astrophysics and Supercomputing.
- 2016–2021 **Future Fellow**, SWINBURNE UNIVERSITY, Hawthorn, Australia.
100% research position funded by Australian Research Council PI grant.
- 2016–2018 **Senior Lecturer**, SWINBURNE UNIVERSITY, Hawthorn, Australia.
Ongoing position within the Centre for Astrophysics and Supercomputing.
- 2015–2016 **Staff Astronomer**, ASTRON, Dwingeloo, The Netherlands.
Permanent staff position within the Astronomy Group.
- 2012–2015 **Veni Fellow**, ASTRON, Dwingeloo, The Netherlands.
100% research position (awarded by Netherlands Organisation for Scientific Research [NWO]).
- 2011–2012 **Postdoctoral Fellow**, ASTRON, Dwingeloo, The Netherlands.
100% research position within the Astronomy Group, left to take up Veni Fellowship.
- 2008–2011 **Jansky Fellow**, NATIONAL RADIO ASTRONOMY OBSERVATORY, Socorro, USA.
100% research position.

Education

- 2005–2008 **Ph.D., Astrophysics**,
Swinburne University, Hawthorn, Australia.
- 2000–2004 **Bachelor of Science – Research & Development**,
Swinburne University, Hawthorn, Australia.
- 2000–2004 **Bachelor of Engineering – Electronic & Computer System (Hons, 1st class)**,
Swinburne University, Hawthorn, Australia.

Ph.D. Thesis

- Title *Precision VLBI astrometry: Instrumentation, algorithms and pulsar parallax determination*
- Supervisors Prof. Steven Tingay, Prof. Matthew Bailes & Dr. John Reynolds
- Description During my Ph.D., I developed the “DiFX” software correlator and commissioned its use within the Australian Long Baseline Array (LBA). The DiFX software correlator has become the de facto standard general-purpose radio interferometry correlator and is a particularly high profile example of radio astronomy instrumentation built around commodity computing resources.

Grants

- Grant, co-PI **ARC Discovery Project "Illuminating the cosmic web with Fast Radio Bursts"**, AU\$900,000, 2022–2024
- Grant, PI **ARC Discovery Project "Afterglow Imaging and Modelling of Gravitational-Wave Mergers"**, AU\$395,000, 2020–2022
- Grant, PI **Bridging Activities for the SKA Pulsar Timing Processor**, AU\$200,000, 2019 – 2020
- Grant, PI **Finding FRBs 50 times faster with UTMOST-2D**, US\$78,200, 2018
- Grant, PI **Completing the SKA Pulsar Timing Processor design**, AU\$444,263, 2017 – 2019
- Grant, PI **ARC Future Fellow**, AU\$685,166, 2016 – 2020
- Grant, PI **NWO Veni Fellow**, €225,000, 2012 – 2015
- Grant, PI **NRAO Jansky Fellow**, US\$70,000/year excluding overheard, 2008 – 2011
- Grant, Co-I **Fermi project "Precision Distances and Velocities for Fermi-detected Radio Pulsars"**, total awarded over Cycles 3–6: US\$315,000, 2009 – 2013
- Grant, Co-I **Australia-India Strategic Research Fund (AISRF)**, AUD\$300,000, 2007

Awards

- 2020 **American Association for the Advancement of Science Newcombe Cleveland Prize** (awarded to the paper Bannister, Deller et al., *Science*, 2019, 365, 565)
- 2020 **Australian Academy of Science Pawsey Medal (Physics)**
- 2019 **Peter McGregor Prize**, awarded to the DiFX collaboration (A. Deller coordinating)
- 2018 **Swinburne University Vice-Chancellors Research Award** (awarded to the Gravitational Waves / FRB group: Deller, Shannon, Bailes et al.)
- 2017 **Faculty of Science and Engineering Top Teaching award**
- 2010 **NRAO "Star" Award**, 2010
- 2010 **A.S.A. Charlene Heisler prize** (best Australian astronomy PhD thesis)
- 2009 **Swinburne Faculty of ICT award for best PhD thesis**
- 2006 **Swinburne University Vice-Chancellors Research Award** (awarded to the SKA group; S. Tingay, R. Bhat, A. Deller, S. Horiuchi & E. Lenc)

Involvement in Large Collaborations

- Project PI **UTMOST-2D**, *Upgrade to the Molonglo radio telescope for FRB localisation*.
- Project PI **PSRPI/MSPSRPI**, *VLBA large pulsar astrometry projects, >1000 hours*.
- Project PI **mJIVE-20**, *VLBA large project surveying radio AGN, 600 hours*.
- Coordinator **DiFX collaboration**, *software correlator used for Very Long Baseline Interferometry*. I am the originator of the project, which includes over 100 members and is used by most VLBI instruments world-wide.
- Exec. team **CRAFT collaboration**, *Fast transient detection on the ASKAP telescope*, current world leader in FRB localisations..
- Associate Inv. **OzGrav**, *ARC Centre for Excellence in Gravitational Wave Discovery*, 2017–current.
- Chief Inv. **CAASTRO**, *ARC Centre of Excellence for All-Sky Astrophysics, Dynamic Theme*, 2017–2018.
- Chair **LOFAR Long Baseline Working Group**, 2014–2016; member 2011–current.

Publication Summary

I have published over 170 refereed articles, including seven Nature and four Science papers. My *h*-index is 50, and I have published 16 first-author papers. I have also contributed (as first author) two chapters to the latest revision of the standard radio interferometry handbook “Synthesis Imaging in Radio Astronomy III”. Below, I list some selected high-impact refereed publications.

- 2020 Day, C., **Deller, A. T.**, Shannon, R. M., et al., *High time resolution and polarization properties of ASKAP-localized fast radio bursts*, 2020, MNRAS, 497, 3335
- 2020 Macquart, J-P., Prochaska, J. X.; McQuinn, M., et al., *A census of baryons in the Universe from localized fast radio bursts*, 2020, Nature, 581, 291
- 2019 **Deller, A. T.**, Goss, W. M., Briskin, W. F. B., et al., *Microarcsecond VLBI Pulsar Astrometry with PSR π II. Parallax Distances for 57 Pulsars*, 2019, ApJ, 875, 100
- 2019 Bannister, K W., **Deller, A. T.**, Phillips, C., et al., *A single fast radio burst localized to a massive galaxy at cosmological distance*, 2019, Science, doi:10.1126
- 2018 Mooley, K. P., **Deller, A. T.**, Gottlieb, O., et al., *Superluminal motion of a relativistic jet in the neutron-star merger GW170817*, 2018, Nature, 561, 355
- 2017 Dexter, J., **Deller, A. T.**, Bower, G. C., et al. *Locating the intense interstellar scattering towards the inner Galaxy*, 2017, MNRAS, 571, 3563
- 2016 **Deller, A. T.**, Vigeland, S. J., Kaplan, D. L., et. al. *Microarcsecond VLBI Pulsar Astrometry with PSR π I: Two Binary Millisecond Pulsars with White Dwarf Companions*, 2016, ApJ, 828, 8
- 2015 **Deller, A. T.**, Moldon, J., Miller-Jones, J. C. A., et al. *Radio imaging observations of PSR J1023+0038 in an LMXB state*, 2015, ApJ, 809, 13
- 2015 Bower, G. C., **Deller, A. T.**, Demorest, P., et al. *The Proper Motion of the Galactic Center Pulsar Relative to Sagittarius A**, 2015, ApJ, 798, 120
- 2014 Bower, G. C., **Deller, A. T.**, Demorest, P., et al. *The Angular Broadening of the Galactic Center Pulsar SGR J1745-29: A New Constraint on the Scattering Medium*, 2014, ApJL, 780, L2
- 2013 **Deller, A. T.**, Boyles, J., Lorimer, D. R., et al. *VLBI Astrometry of PSR J2222-0137: A Pulsar Distance Measured to 0.4% Accuracy*, 2013, ApJ, 770, 145
- 2013 Eatough, R. P., Falcke, H., Karuppusamy, R., et al. *A strong magnetic field around the supermassive black hole at the centre of the Galaxy*, 2013, Nature, 501, 391
- 2012 **Deller, A. T.**, Archibald, A. M., Briskin, W. F., et al. *A Parallax Distance and Mass Estimate for the Transitional Millisecond Pulsar System J1023+0038*, 2012, ApJL, 756, L25
- 2011 **Deller, A. T.**, Briskin, W. F., Phillips, C. J. et al., *DiFX-2: A More Flexible, Efficient, Robust, and Powerful Software Correlator*, 2011, PASP, 123, 275
- 2009 **Deller, A. T.**, Bailes, M., & Tingay, S. J. *Implications of a VLBI Distance to the Double Pulsar J0737–3039A/B*, 2009, Science, 323, 1327
- 2008 **Deller, A. T.**, Verbiest, J. P. W., Tingay, S. J., & Bailes, M. *Extremely High Precision VLBI Astrometry of PSR J0437-4715 and Implications for Theories of Gravity*, 2008, ApJL, 685, L67
- 2007 **Deller, A. T.**, Tingay, S. J., Bailes, M., & West, C. *DiFX: A Software Correlator for Very Long Baseline Interferometry Using Multiprocessor Computing Environments*, 2007, PASP, 119, 318

Selected Lectures and Invited Talks

- 2021 **Invited review**, “*The FRB population as seen by ASKAP*”, YITP International Workshop 2020 (Kyoto, Japan / Virtual).
- 2020 **Lecturer**, “*Cross-correlators*”, and “*VLBI*”, 17th NRAO Synth. Imaging School (USA).
- 2020 **Invited plenary review**, “*The FRB phenomenon*”, FRB2020 (virtual / Thailand).
- 2019 **Invited review**, “*Radio Astrometry of Energetic Transients: NS merger afterglows and Fast Radio Bursts*”, Yukawa International Seminar 2019 (Kyoto, Japan).
- 2018 **Lecturer**, “*Cross-correlators*”, and “*VLBI*”, 16th NRAO Synth. Imaging School (USA).
- 2016 **Lecturer**, “*Cross-correlators*”, and “*VLBI*”, 15th NRAO Synth. Imaging School (USA).
- 2016 **Invited review**, “*Pulsar astrometry with SKA1-VLBI*”, EWASS 2016 (Athens, GR).
- 2014 **Invited review**, “*Pulsar VLBI*”, JIVE-ERIC Symposium (Dwingeloo, NL).
- 2014 **Invited review**, “*Pulsar distances*”, 40th COSPAR Sci. Assembly (Moscow, RUS).
- 2014 **Lecturer**, “*Cross-correlators*”, and “*VLBI*”, 14th NRAO Synth. Imaging School (USA).
- 2013 **Invited plenary review**, “*Radio pulsars*”, East Asia SKA Workshop (Nagoya, JP).
- 2010 **Lecturer**, “*VLBI*”, 12th NRAO Synth. Imaging School (USA).

Selected Advisory Panel and Professional Service

- Tier 1 member **SKA Pulsars Science Working Group**, 2014–current; member 2013–2014.
- Core member **SKA Transients Science Working Group**, 2013 – current.
- Core member **SKA VLBI Working Group**, 2015 – current.
- Chair **MWA-X Correlator Critical Design Review**, 2020.
- Chair **ATNF Time Assignment Committee**, 2020 – current; previously panel member (2018 – 2020), expert reader (2015 – 2018).
- Panel member **Murchison Widefield Array Time Assignment Committee**, 2018 – 2020.
- Panel member **Australian Radio Telescope Advisory Committee**, 2017 – 2018.
- Panel member **Apertif Radio Transient System (ARTS) critical design review**, 2016.
- Panel member **Apertif Radio Transient System (ARTS) preliminary design review**, 2015.
- Panel member **SKA1 Central Signal Processor preliminary design review**, 2014.
- Panel member **FAST proposal review**, 2021.
- Panel member **LOFAR proposal technical review**, Cycles 0–3, 2012–2014.
- Reviewer **Nature**, **Science**, **ApJ**, **ApJ Letters**, **Experimental Astronomy**, **MNRAS**, **PASJ**, **Astronomy & Computing**.

Professional Affiliations

- Fellow Astronomical Society of Australia
- Member Nederlandse Astronomenclub
- Member International Astronomical Union

Languages

- English **Native speaker**
- Dutch **Fluent**