Dougal Dobie

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I am a PhD student at the University of Sydney working in radio astronomy, with a focus in radio transients, gravitational waves and high-energy astrophysics. I'm also interested in multi-wavelength transients science, data science and machine learning.

Education

Doctor of Philosophy (Science)	**University of Sydney**
Thesis title: Radio follow-up of gravitational wave events	*2017–present*

Bachelor of Science (Advanced) (Hons.)	**University of Sydney**
Physics (major), Applied Mathematics and Computational Science	*2013–2016*

Refereed Publications

I am first author of 4 papers published in the *Publications of the Astronomical Society of Australia* and *Astrophysical Journal Letters*, one of which was awarded the University of Sydney Faculty of Science Postgraduate Research Prize for Outstanding Academic Achievement.

I am also a co-author of 12 other papers published in a range of journals including *Nature* and *Science*. My h-index is 10, with over 1900 total citations (>60 citations for first author papers). A chronological list of my publications is attached at the end of this document.

Professional Activities

Australia Telescope User Committee Representative	**Australia Telescope National Facility**
Liase between the telescope user community and ATNF Director	*2018/2019*
Duty Astronomer	**Australia Telescope National Facility**
Assist observers using the Australia Telescope Compact Array	*2017-present*
Local Organising Committee	**University of Sydney**
Local logistics for Science At Low Frequencies IV	*December 12-17, 2017*

Invited Talks

Exploring the Universe with Gravity & Light	**Shanghai Astronomical Observatory**
The 5th Chinese SKA Summer School 2019	*August 2019*
Detection of Radio Emission from a Gravitational Wave Event	**Macquarie University**
Stars in Sydney 2017	*November 2017*

Succesful Telescope Proposals

I am the PI of the ongoing ATCA proposal *Radio follow-up of LIGO gravitational wave events* (750 hrs). I am also the PI or co-I on multiple other standard and target-of-opportunity ATCA proposals, totalling several hundred hours of observing time. I regularly successfully request target-of-opportunity observing with the ATCA to follow-up interesting transient sources. I have extensive experience carrying out ATCA observations and data reduction.

I am also a co-I of several proposals on the MWA (3 hrs), ASKAP (100 hrs) and the VLA (280 hrs). I have experience with data reduction and analysis of observations from all three of these telescopes.

Teaching Experience

Undergraduate Tutor — **University of Sydney**
Lab tutor (Second Year Physics), Night Viewing guide (First Year Astronomy) — *2016–present*

Teaching Assistant — **University of Sydney**
OLET1618 – Data Driven Astronomy: Algorithms — *2018–present*

Online Tutor — **Coursera**
Coursera – Data Driven Astronomy — *2018–present*

Lecturer — **Shanghai Astronomical Observatory**
The 5th Chinese SKA Summer School 2019 — *August 2019*

Undergraduate Research Advisor — **University of Sydney**
Pablo Bonilla Ataides - "Prospects for radio follow-up of BNS mergers" — *2019*

Workshop development — **GROWTH Astronomy School**
Undegraduate workshop on radio data analysis — *December 2018, August 2019*

Course Development — **University of Sydney**
Material for Data Driven Astronomy online course — *2016/17*

Awards and Commendations

Faculty of Science Postgraduate Research Prize for Outstanding Academic Achievement — *2019*

University of Sydney Postgraduate Research Support Scheme — *2019*

University of Sydney Merit Award — *2017-2020*

Research Training Program (RTP) Stipend Scholarship — *2017-2020*

University of Sydney School of Physics Summer Research Scholarship — *2013/14, 2014/15*

University of Sydney Mathematics Entry Scholarship — *2013*

Selected Public Outreach

I believe a key responsibility of all scientists is communicating their results to the general public. I regularly volunteer at public outreach events and have three years of experience communicating science to the public at Sydney Observatory. I have also given interviews to the Australian media about my research. Below are some examples of my experience with science communication

Astronomy Educator — **Sydney Observatory**
Educating school groups and the general public — *2016–present*

Workshop Facilitator & Science Advisor — **Galaxy Convention**
Promoting female innovation and entreupenership in STEM — *5 December 2017*

Science in a Lunchtime — **Mosman High School**
Q&A: Exploring the Hidden Universe & Careers in Astronomy — *17 November 2017*

CAASTRO Astronomer in Residence — **Ayers Rock Resort**
Educating the general public & promoting Australian astronomy — *August 2017*

Sydney Astrofest — **University of Sydney**
Interacting with the public and general logistics — *2016, 2017*

Publications

Dougal Dobie, David L. Kaplan, Kenta Hotokezaka, et al. Constraining properties of neutron star merger outflows with radio observations. *MNRAS* (submitted), arXiv:1910.13662, Oct 2019b.

Dougal Dobie, Adam Stewart, Tara Murphy, et al.. An ASKAP search for a radio counterpart to the first high-significance neutron star-black hole merger LIGO/Virgo S190814bv. *ApJ* (submitted), arXiv:1910.13647, Oct 2019c.

Igor Andreoni and Daniel A. Goldstein, et al. (incl. **Dobie** and 49 others) GROWTH on S190814bv: Deep Synoptic Limits on the Optical/Near-Infrared Counterpart to a Neutron Star-Black Hole Merger. *ApJ* (submitted), arXiv:1910.13409, Oct 2019.

David Kaplan, Shi Dai, Emil Lenc, et al. (incl. **Dobie** and 9 others). Serendipitous Discovery of PSR J1431-6328 as a Highly Polarized Point Source with the Australian SKA Pathfinder. *ApJ*, 884(1):96, Oct 2019. doi: 10.3847/1538-4357/ab397f.

Filip W. Chatys, Timothy R. Bedding, Simon J. Murphy, et al. (incl. **Dobie** and 2 others). The period-luminosity relation of red supergiants with Gaia DR2. *MNRAS*, page 1518, Jun 2019. doi: 10.1093/mnras/stz1584.

D. Dobie, T. Murphy, D. L. Kaplan, et al. An optimised gravitational wave follow-up strategy with the Australian Square Kilometre Array Pathfinder. *PASA*, 36:e019, Jan 2019. doi: 10.1017/pasa.2019.9.

Anna Y. Q. Ho, E. Sterl Phinney, Vikram Ravi, et al. (incl. **Dobie** and 13 others). AT2018cow: A Luminous Millimeter Transient. *ApJ*, 871(1):73, Jan 2019. doi: 10.3847/1538-4357/aaf473.

K. P. Mooley, D. A. Frail, **D. Dobie**, et al. A Strong Jet Signature in the Late-time Light Curve of GW170817. *ApJ*, 868(1):L11, Nov 2018a. doi: 10.3847/2041-8213/aaeda7.

Dougal Dobie, David L. Kaplan, Tara Murphy, et al. A Turnover in the Radio Light Curve of GW170817. *ApJ*, 858(2):L15, May 2018. doi: 10.3847/2041-8213/aac105.

K. P. Mooley, E. Nakar, K. Hotokezaka, et al. (incl. **Dobie** and 21 others). A mildly relativistic wide-angle outflow in the neutron-star merger event GW170817. *Nature*, 554(7691):207–210, Feb 2018b. doi: 10.1038/nature25452.

G. Hallinan, A. Corsi, K. P. Mooley, et al. (incl. **Dobie** and 29 others) A radio counterpart to a neutron star merger. *Science*, 358(6370):1579–1583, Dec 2017. doi: 10.1126/science.aap9855.

M. M. Kasliwal, E. Nakar, L. P. Singer, et al. (incl. **Dobie** and 76 others) Illuminating gravitational waves: A concordant picture of photons from a neutron star merger. *Science*, 358(6370):1559–1565, Dec 2017. doi: 10.1126/science.aap9455.

I. Andreoni, K. Ackley, J. Cooke, et al. (incl. **Dobie** and 120 others) Follow Up of GW170817 and Its Electromagnetic Counterpart by Australian-Led Observing Programmes. *PASA*, 34:e069, Dec 2017. doi: 10.1017/pasa.2017.65.

B. P. Abbott, R. Abbott, T. D. Abbott, et al. (incl. **Dobie** and 3673 others) Multi-messenger Observations of a Binary Neutron Star Merger. *ApJ*, 848(2):L12, Oct 2017. doi: 10.3847/2041-8213/aa91c9.

Tara Murphy, David L. Kaplan, Martin E. Bell, et al. (incl. **Dobie** and 23 others) Low-Frequency Spectral Energy Distributions of Radio Pulsars Detected with the Murchison Widefield Array. *PASA*, 34:e020, Apr 2017. doi: 10.1017/pasa.2017.13.

M. E. Bell, Tara Murphy, S. Johnston, et al. (incl. **Dobie** and 34 others) Time-domain and spectral properties of pulsars at 154 MHz. *MNRAS*, 461(1):908–921, Sep 2016. doi: 10.1093/mnras/stw1293.