Liam Dunn

Email: liam [at] ldunn.me

Education

2020–2024 PhD in Physics, The University of Melbourne.
Supervisors: Andrew Melatos (primary) & Katie Auchettl (secondary).
2018–2019 MSc in Physics, The University of Melbourne.
Thesis title: *Detecting radio pulsar glitches with hidden Markov models.*
Supervisor: Andrew Melatos.
2014–2017 BSc in Mathematical Physics, The University of Melbourne.

Awards & Scholarships

2020 Research Training Program Scholarship, Australian Government Department of Education.
2020 Rowden White Scholarship, The University of Melbourne.
2019 John Tyndall Scholarship, The Univeristy of Melbourne.
2019 Dieul-Kurzweil Scholarship, The University of Melbourne.
2018 N. D. Goldsworthy Scholarship for Physics, The University of Melbourne.
2017 Bryan Scholarship, The University of Melbourne.
2015 Summer Research Scholarship, Monash University.

Positions

2022 Undergraduate lab demonstrator, The University of Melbourne.
2015–2017 Undergraduate researcher, Monash University.
2016–2017 Undergraduate researcher, The University of Melbourne.

Publications

Published journal articles

2024 L. Dunn et al., *Search for continuous gravitational waves from neutron stars in globular clusters with a phase-tracking hidden Markov Model in the third LIGO observing run.* Published in *Physical Review D.*
DOI: TODO. ARXIV: TODO.

2024 L. Dunn et al., *First results from the UTMOST-NS pulsar timing programme.* Published in *Monthly Notices of the Royal Astronomical Society.*
DOI: TODO. ARXIV: TODO.

2024 A. Knee et al., *Search for continuous gravitational waves directed at subthreshold radiometer candidates in O3 LIGO data.* Published in *Physical Review D.*
DOI: TODO. ARXIV: TODO.

2024 A. Mandlik et al., *The UTMOST-NS: A fully digital, wide-field transient search facility operating at a*

centre frequency of 831 MHz. Published in *Monthly Notices of the Royal Astronomical Society.* DOI: TODO. ARXIV: TODO.

2023 M. E. Lower et al., *Rotational and radio emission properties of PSR J0738–4042 over half a century.* Published in *Monthly Notices of the Royal Astronomical Society.* DOI: 10.1093/mnras/stad2243. ARXIV: 2307.11953.

2023 L. Dunn, A. Melatos, C. M. Espinoza, D. Antonopoulou, R. Dodson, *A new small glitch in Vela discovered with a hidden Markov model.* Published in *Monthly Notices of the Royal Astronomical Society.* DOI: 10.1093/mnras/stad1335. ARXIV: 2304.13382.

2023 M. E. Lower, G. Younes, P. Scholz, F. Camilo, L. Dunn, et al., *The 2022 high-energy outburst and radio disappearing act of the magnetar 1E 1547.0–5408.* Published in *The Astrophysical Journal.* DOI 10.3847/1538-4357/acbc7c. ARXIV: 2302.07397.

2022 D. Jones, L. Sun, J. Carlin, L. Dunn, et al., *Validating continuous gravitational-wave candidates from a semicoherent search using Doppler modulation and an effective point spread function.* Published in *Physical Review D.* DOI: 10.1103/PhysRevD.106.123011. ARXIV: 2203.14468.

2022 D. Beniwal, P. Clearwater, L. Dunn, et al., *Search for continuous gravitational waves from HESS J1427–608 with a hidden Markov model.* Published in *Physical Review D.* DOI: 10.1103/PhysRevD.106.103018. ARXIV: 2210.09592.

2022 L. Dunn, et al., *Systematic upper limits on the size of missing pulsar glitches in the first UTMOST open data release.* Published in *Monthly Notices of the Royal Astronomical Society.* DOI:10.1093/mnras/stac551. ARXIV:2202.12442.

2022 M. Millhouse, A. Melatos, G. Howitt, J. B. Carlin, L. Dunn, G. Ashton, *An updated glitch rate law inferred from radio pulsars.* Published in *Monthly Notices of the Royal Astronomical Society.* DOI:10.1093/mnras/stac194. ARXIV: 2202.01930.

2022 L. Dunn, P. Clearwater, A. Melatos, K. Wette, *Graphics processing unit implementation of the $\mathcal{F}$-statistic for continuous gravitational wave searches.* Published in *Classical and Quantum Gravity.* DOI:10.1088/1361-6382/ac4616. ARXIV: 2201.00451.

2021 M. E. Lower, S. Johnston, L. Dunn, et al., *The impact of glitches on young pulsar rotational evolution.* Published in *Monthly Notices of the Royal Astronomical Society.* DOI:10.1093/mnras/stab2678. ARXIV: 2109.07612.

2021 L. Dunn, M. E. Lower, A. Melatos, *Effects of periodicity in observation scheduling on parameter estimation of pulsar glitches.* Published in *Monthly Notices of the Royal Astronomical Society.* DOI:10.1093/mnras/stab1097. ARXIV: 2104.07363.

2021 K. Wette, L. Dunn, P. Clearwater, A. Melatos, *Deep exploration for continuous gravitational waves at* 171–172 Hz *in LIGO second observing run data.* Published in *Physical Review D.* DOI:10.1103/PhysRevD.103.083020. ARXIV:2103.12976.

2021 D. Beniwal, P. Clearwater, L. Dunn, A. Melatos, D. Ottaway, *Search for continuous gravitational waves from ten H.E.S.S. sources using a hidden Markov model.* Published in *Physical Review D.* DOI:10.1103/PhysRevD.103.083009. ARXIV:2012.06334.

2020 H. Middleton, P. Clearwater, A. Melatos, L. Dunn, *Search for gravitational waves from five low mass X-ray binaries in the second Advanced LIGO observing run with an improved hidden Markov model.* Published in *Physical Review D.* DOI:10.1103/PhysRevD.102.023006. ARXIV:2006.06907.

2020 A. Melatos, L. M. Dunn, S. Suvorova, W. Moran, R. J. Evans, *Pulsar glitch detection with a hidden Markov model.* Published in *The Astrophysical Journal.* DOI:10.3847/1538-4357/ab9178.

arXiv:2005.09388.

2019 LIGO Scientific Collaboration, Virgo Collaboration, L. Dunn, S. Suvorova, R. J. Evans, W. Moran, *Search for gravitational waves from Scorpius X-1 in the second Advanced LIGO observing run with an improved hidden Markov model.* Published in *Physical Review D.* DOI:10.1103/PhysRevD.100.122002. arXiv:1906.12040.

2017 S. Akula, C. Balázs, L. Dunn, G. A. White, *Electroweak baryogenesis in the $\mathbb{Z}_3$-invariant NMSSM.* Published in *The Journal of High Energy Physics.* DOI:10.1007/JHEP11(2017)051. arXiv:1706.09898.

Rapid communications

2023 L. Dunn et al., *Confirmation of glitch event observed in PSR J1740-3015.* Astronomer's Telegram #15839.

2022 L. Dunn et al., *Confirmation of glitch event observed in PSR J0742-2822.* Astronomer's Telegram #15631.

2021 L. Dunn et al., *Confirmation of glitch event observed in the Vela pulsar (PSR J0835-4510).* Astronomer's Telegram #14807.

Last updated: March 2, 2024 • Typeset in XeLaTeX