Dr Gregory Ashton: publications

August 2021

Listed below are the 33 published articles and 3 pre-prints for which I have made significant personal contributions (this list is also available as an ADS Library). I am the lead author of 17 of these articles, 13 of which are published in journals with an impact factor greater than 5, including one published in Nature Astronomy. The publications listed here have been cited over 1000 times and have a refereed h-index of 15 (10 for my first-author publications alone). In addition, I have more than 120 additional publications as part of the LIGO Scientific Collaboration with an h-index for all articles of 55. I list below only the collaboration papers to which I have significantly contributed; a description of my role is given for each.

[31] **Ashton, G.** and Talbot, C. (2021). Bilby-MCMC: An MCMC sampler for gravitational-wave inference. *Mon. Notices Royal Astron. Soc.* (1 citation)

[30] The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, et al. (2021). Observation of Gravitational Waves from Two Neutron Star-Black Hole Coalescences. *Astrophys. J. Lett.*, 915(1):L5 (40 citations, **role: I developed and applied the parallelised software suite which enabled the inference of the source properties**)

[29] Keitel, D., Tenorio, R., **Ashton, G.**, and Prix, R. (2021). PyFstat: a Python package for continuous gravitational-wave data analysis. *The Journal of Open Source Software*, 6(60):3000 (3 citations)

[28] You, Z.-Q., Zhu, X.-J., **Ashton, G.**, Thrane, E., and Zhu, Z.-H. (2021). Standard-siren Cosmology Using Gravitational Waves from Binary Black Holes. *Astrophys. J.*, 908(2):215 (4 citations)

[27] Burns, E., Svinkin, D., Hurley, K., Wadiasingh, Z., Negro, M., Younes, G., Hamburg, R., Ridnaia, A., Cook, D., Cenko, S. B., Aloisi, R., **Ashton, G.**, Baring, M., Briggs, M. S., Christensen, N., Frederiks, D., Goldstein, A., Hui, C. M., Kaplan, D. L., Kasliwal, M. M., Kocevski, D., Roberts, O. J., Savchenko, V., Tohuvavohu, A., Veres, P., and Wilson-Hodge, C. A. (2021). Identification of a Local Sample of Gamma-Ray Bursts Consistent with a Magnetar Giant Flare Origin. *Astrophys. J. Lett.*, 907(2):L28 (5 citation)

[26] Sarin, N., Lasky, P. D., and **Ashton, G.** (2020b). Interpreting the X-ray afterglows of gamma-ray bursts with radiative losses and millisecond magnetars. *Mon. Notices Royal Astron. Soc.*, 499(4):5986–5992 (4 citations)

[25] Romero-Shaw, I. M., Talbot, C., Biscoveanu, S., D'Emilio, V., **Ashton, G.**, et al. (2020). Bayesian inference for compact binary coalescences with BILBY: Validation and application to the first LIGO-Virgo gravitational-wave transient catalogue. *Mon. Notices Royal Astron. Soc.* (71 citations)

[24] Ackley, K. et al. (2020). Neutron Star Extreme Matter Observatory: A kilohertz-band gravitational-wave detector in the global network. *Publ. Astron. Soc. Aust.*, 37 (34 citations)

[23] Smith, R., **Ashton, G.**, Vajpeyi, A., and Talbot, C. (2020). Massively parallel Bayesian inference for transient gravitational-wave astronomy. *Mon. Notices Royal Astron. Soc.*, 498(3):4492–4502 (50 citations)

[22] **Ashton, G.** and Thrane, E. (2020). The astrophysical odds of GW151216. *Mon. Notices Royal Astron. Soc.*, 498(2):1905–1910 (6 citations)

[21] Zhu, X.-J. and **Ashton, G.** (2020). Characterizing Astrophysical Binary Neutron Stars with Gravitational Waves. *Astrophys. J. Lett.*, 902(1):L12 (4 citations)

[20] **Ashton, G.** and Khan, S. (2020). Multiwaveform inference of gravitational waves. *Phys. Rev. D*, 101:064037 (11 citations)

[19] Sarin, N., Lasky, P. D., and **Ashton, G.** (2020a). Gravitational waves or deconfined quarks: What causes the premature collapse of neutron stars born in short gamma-ray bursts? *Phys. Rev. D*, 101(6):063021 (23 citations)

[18] The LIGO Scientific Collaboration, the Virgo Collaboration, et al. (2020). GW190425: Observation of a Compact Binary Coalescence with Total Mass $\sim 3.4\ M_\odot$. *Astrophys. J. Lett.*, 892(1):L3 (630 citations, **role: I lead analysis of the source properties and was a member of the paper writing team**)

[17] **Ashton, G.**, Thrane, E., and Smith, R. J. E. (2019c). Gravitational wave detection without boot straps: A Bayesian approach. *Phys. Rev. D*, 100(12):123018 (8 citation)

[16] **Ashton, G.**, Lasky, P. D., Graber, V., and Palfreyman, J. (2019b). Rotational evolution of the Vela pulsar during the 2016 glitch. *Nature Astronomy*, page 417 (33 citations)

[15] Lasky, P. D., Sarin, N., and **Ashton, G.** (2019). Neutron star merger remnants: Braking indices, gravitational waves, and the equation of state. In *American Institute of Physics Conference Series*, volume 2127 of *American Institute of Physics Conference Series*, page 020025 (2 citations)

[14] **Ashton, G.**, Hübner, M., Lasky, P. D., Talbot, C., et al. (2019a). BILBY: A User-friendly Bayesian Inference Library for Gravitational-wave Astronomy. *Astrophys. J. Sup.*, 241(2):27 (205 citations)

[13] Sarin, N., Lasky, P. D., and **Ashton, G.** (2019). X-Ray Afterglows of Short Gamma-Ray Bursts: Magnetar or Fireball? *Astrophys. J.*, 872(1):114 (14 citations)

[12] Keitel, D. and **Ashton, G.** (2018). Faster search for long gravitational-wave transients: GPU implementation of the transient F-statistic. *Classical and Quantum Gravity*, 35(20):205003 (5 citations)

[11] **Ashton, G.**, Prix, R., and Jones, D. I. (2018b). A semicoherent glitch-robust continuous-gravitational-wave search method. *Phys. Rev. D*, 98(6):063011 (6 citations)

[10] Sarin, N., Lasky, P. D., Sammut, L., and **Ashton, G.** (2018). X-ray guided gravitational-wave search for binary neutron star merger remnants. *Phys. Rev. D*, 98(4):043011 (19 citations)

[9] **Ashton, G.**, Burns, E., Dal Canton, T., Dent, T., Eggenstein, H. B., Nielsen, A. B., Prix, R., Was, M., and Zhu, S. J. (2018a). Coincident Detection Significance in Multimessenger Astronomy. *Astrophys. J.*, 860(1):6 (16 citations)

[8] **Ashton, G.** and Prix, R. (2018). Hierarchical multistage MCMC follow-up of continuous gravitational wave candidates. *Phys. Rev. D*, 97(10):103020 (14 citations)

[7] LIGO Scientific Collaboration, Virgo Collaboration, et al. (2017). First low-frequency Einstein@Home all-sky search for continuous gravitational waves in Advanced LIGO data. *Phys. Rev. D*, 96(12):122004 (53 citations, **role: I helped prepare the candidate lists and performed follow-ups to veto non-astrophysical candidates**)

[6] **Ashton, G.**, Prix, R., and Jones, D. I. (2017b). Statistical characterization of pulsar glitches and their potential impact on searches for continuous gravitational waves. *Phys. Rev. D*, 96(6):063004 (27 citations)

[5] Jones, D. I., **Ashton, G.**, and Prix, R. (2017). Implications of the Occurrence of Glitches in Pulsar Free Precession Candidates. *Phys. Rev. Lett.*, 118(26):261101 (9 citations)

[4] **Ashton, G.**, Jones, D. I., and Prix, R. (2017a). On the free-precession candidate PSR B1828-11: Evidence for increasing deformation. *Mon. Notices Royal Astron. Soc.*, 467(1):164–178 (12 citations)

[3] Baker, A., Beg, M., **Ashton, G.**, Albert, M., et al. (2017). Proposal of a micromagnetic standard problem for ferromagnetic resonance simulations. *Journal of Magnetism and Magnetic Materials*, 421:428–439 (19 citations)

[2] **Ashton, G.**, Jones, D. I., and Prix, R. (2016). Comparing models of the periodic variations in spin-down and beamwidth for PSR B1828-11. *Mon. Notices Royal Astron. Soc.*, 458(1):881–899 (10 citations)

[1] **Ashton, G.**, Jones, D. I., and Prix, R. (2015). Effect of timing noise on targeted and narrow-band coherent searches for continuous gravitational waves from pulsars. *Phys. Rev. D*, 91(6):062009 (15 citations)