

Stephen Taylor | Curriculum Vitae

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Professional Experience

NASA Jet Propulsion Laboratory

NASA Postdoctoral Fellow

Pasadena, USA

2014–Present

California Institute of Technology

Visiting scholar (TAPIR group)

Pasadena, USA

2014–Present

Institute of Astronomy, University of Cambridge

PhD candidate

Cambridge, UK

2010–2014

Education

Institute of Astronomy, University of Cambridge

PhD (Astronomy)

Cambridge, UK

2010–2014

Advisor: Dr. Jonathan R. Gair; **Thesis Title:** *Exploring the cosmos with gravitational waves*

Description: A new Bayesian hierarchical modelling scheme is introduced to use compact-binary gravitational-wave standard sirens to infer the mass-distribution of the binary population, the progenitor star-formation rate, and cosmological parameters. Advanced pulsar-timing array techniques are developed to map the nanohertz gravitational-wave sky through a parametrized overlap-reduction function, and large accelerations to the Bayesian inference of single supermassive black-hole binary searches are proposed.

University of Oxford

MPhys (1st Class), [ranked 1st in Jesus College, 4th across University]

Oxford, UK

2006–2010

Advisor: Prof. Steven Rawlings; **Thesis Title:** *The Cosmic Evolution Of Black-hole Accretion*

Grants & Funding

“New Directions and New Opportunities for NANOGrav Astrophysics”: Awarded \$11k for a proposal on behalf of the Astrophysics Working Group of NANOGrav. Funding will ensure undergraduate/graduate students and outside experts can attend a sprint week in March 2017 to advance several key areas of interest, and to achieve rapid progress on collaboration projects.

Awards & Prizes

2015: International Pulsar Timing Array (IPTA) Steering Committee Prize — “Honourable Mention”

2015: Gravitational Wave International Committee (GWIC) Thesis Prize — “Honourable Mention”

2014: NASA Postdoctoral Fellowship (JPL)

2014: Royal Astronomical Society Travel Award — £750

2013: Royal Astronomical Society Travel Award — £700

2012–2014: Christ’s College (Cambridge) Travel Grants [various; total exceeds £1k]

2010: Science and Technology Facilities Council (STFC) — full PhD studentship award

2008: Examiner’s Prize, Oxford Physics Speaking Competition

2007: Oxford Physics department prize for laboratory work

2007–2010: Undergraduate Scholar of Jesus College, Oxford

2006–2010: Regularly awarded Oxford undergraduate departmental and college examination prizes

Teaching Experience

Jun–Aug 2016: Co-supervisor of Caltech summer undergraduate student

May 2016: Lecturer for Caltech's TAPIR gravitational-wave class
Mar 2016: Co-organizer of student workshop at NANOGrav Spring meeting
Sep 2015: Lecturer for NANOGrav detection-group workshop at Caltech
Jun 2015: Lecturer at "CSI PTA" Aspen summer workshop
2011–2013: Supervisor for Cambridge Part II undergraduate students in RELATIVITY
2011: Prepared computing coursework for Cambridge Part II undergraduate students

Professional Service & Outreach

Reviewer for international journals.....

Monthly Notices of the Royal Astronomical Society (MNRAS), Physical Review D (PRD)

Conference organization.....

Oct 2016: Chair of SOC for NANOGrav Fall meeting at University of Illinois Urbana-Champaign

Mar 2016: SOC and LOC member for NANOGrav Spring meeting at Caltech

Mar 2016: Co-organizer of NANOGrav student workshop at Caltech

Mar 2014: SOC and LOC member for British Gravity meeting (BritGrav) at Cambridge, UK

Outreach.....

2016: Featured gravitational-wave expert at NASA's "Ticket to Explore JPL" event

2013: Presentation at Cambridge's Institute of Astronomy Open Day

2012–2014: Presentation to prospective students (Institute of Astronomy graduate interviews)

2012: Outreach talk at Institute of Astronomy public-observing evening

2011: Presentation at Cambridge's Institute of Astronomy Open Day

Professional Affiliations

North American Nanohertz Observatory for Gravitational-waves (NANOGrav) [Full member] • **European Pulsar Timing Array (EPTA)** [Member] • **International Pulsar Timing Array (IPTA)** [Member] • **American Physical Society (and DGRAV)** [Member] • **American Astronomical Society** [Member] • **Royal Astronomical Society** [Fellow]

Publications

- 22 peer-reviewed publications (of which 8 are first-author) with 317 citations, h-index 10.
- Full list available at <https://scholar.google.com/citations?user=iN2djBMAAAAJ&hl=en>.
- 5 key publications are listed below, in no specific order.

1: **S. R. Taylor**, M. Vallisneri, J. A. Ellis, C. M. F. Mingarelli, T. J. W. Lazio, and R. van Haasteren. "Are We There Yet? Time to Detection of Nanohertz Gravitational Waves Based on Pulsar-timing Array Limits". *Astrophys. J. Lett*, 819:L6 (2016). **[7 citations]**

2: L. Lentati, **S. R. Taylor**, [and 34 others]. "European Pulsar Timing Array limits on an isotropic stochastic gravitational-wave background". *MNRAS*, 453:2576–2598 (2015). **[56 citations]**

3: **S. R. Taylor**, C. M. F. Mingarelli, J. R. Gair, [and 32 others]. "Limits on Anisotropy in the Nanohertz Stochastic Gravitational Wave Background". *Phys.Rev. Lett*, 115(4):041101 (2015). **[13 citations]**

4: **S. R. Taylor** and J. R. Gair. "Searching for anisotropic gravitational-wave backgrounds using pulsar timing arrays". *Phys. Rev. D*, 88(8):084001 (2013). **[30 citations]**

5: **S. R. Taylor**, J. R. Gair, and I. Mandel. "Cosmology using advanced gravitational-wave detectors alone". *Phys. Rev. D*, 85(2):023535 (2012). **[34 citations]**

Presentations

29 oral presentations (of which 10 were invited), with 4 conference leadership roles.

References

Available upon request.