Jonathan Reavley Gair

Contact Details

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Personal

Date of Birth:	13th April 1977
Nationality:	British and Canadian dual citizenship.
Marital Status:	Single.

Employment

2004-present: Research Fellow of St.Catharine's College, University of Cambridge, working at Institute of Astronomy, Cambridge.

2002-2004: Postdoctoral researcher in Theoretical Astrophysics at California Institute of Technology, working with Kip Thorne and Sterl Phinney.

Education

1999-2002: PhD at Institute of Astronomy, University of Cambridge, supervised by Prof. Donald Lynden-Bell. Thesis entitled "Generalised Tolman-Bondi Cosmologies and Kerr Metric Atoms" approved September 2002

1998-1999: Part III Mathematics at University of Cambridge. Distinction.

1995-1998: First Class BA Honours in the Mathematical Tripos at St. Catharine's College, University of Cambridge.

Awards and Prizes Academic

- Royal Society University Research Fellowship, 1/10/2007 – 30/9/2012.

Postgraduate

- Rayleigh-Knight prize 2001, awarded by the University of Cambridge for the paper *An Investigation of Bound States in the Kerr-Newman Potential*.
- Elected to Senior Scholarships yearly 1998-2000 by St. Catharine's College, Cambridge.
- Recipient of a PPARC PhD studentship (1999-2002).

Undergraduate

- Elected to John-Cartwright Scholarships (yearly 1996-1998) by St. Catharine's College, Cambridge.

Publications

1. **Gair**, **J R**, Li, C and Mandel, I, 2007, *Observable properties of orbits in exact bumpy spacetimes*, *Phys. Rev.* D submitted.

2. Mandel, I, Brown, D A, **Gair**, **J R** and Miller, M C, 2007, *Rates and characteristics of intermediate-mass-ratio inspirals detectable by Advanced LIGO*, *Astrophys. J* submitted.

3. Amaro-Seaone, P, **Gair**, **J R**, Freitag, M, Miller, M C, Mandel, I, Cutler, C and Babak, S, 2007, *Intermediate and extreme mass-ratio inspirals astrophysics, science applications and detection using LISA*, *Class. Quantum Grav.* **24**, R113.

4. **Gair**, **J R** and Jones, G J, 2007, *Detecting LISA sources using time-frequency techniques*, proceedings of Eleventh Marcel Grossmann meeting, submitted.

5. **Gair**, **J R**, 2007, *Approximate waveform templates for detection of extreme mass ratio inspirals with LISA*, proceedings of Eleventh Marcel Grossmann meeting, submitted.

6. **Gair**, **J R** and Lynden-Bell, D, 2007, *Electromagnetic fields of separable space-times*, *Class. Quantum Grav.* **24**, 1557.

7. Brown, D A, Fang, H, **Gair**, **J R**, Li, C, Lovelace, G, Mandel, I and Thorne, K S, 2006, *Gravitational waves from intermediate mass ratio inspirals for ground based detectors*, *Phys. Rev. Lett.* accepted.

8. **Gair**, **J R** and Jones, G J, 2007, *Detecting extreme mass ratio inspiral events in LISA data using the Hierarchical Algorithm for Clusters and Ridges (HACR)*, *Class. Quantum Grav.* **24**, 1145.

9. Wen, L, Chen, Y and **Gair**, **J R**, 2006, *Extracting information about EMRIs using time-frequency methods*, proceedings of 6th LISA symposium *AIP Conference Proceedings* **873**, 595.

10. Stroeer, A, **Gair**, **J R** and Vecchio, A, 2006, *Automatic Bayesian inference for LISA data analysis strategies*, proceedings of 6th LISA symposium, *AIP Conference Proceedings* **873**, 444.

11. Babak, S, Fang, H, **Gair**, **J R**, Glampedakis, K and Hughes, S A, 2007, *"Kludge" gravitational waveforms for a test body orbiting a Kerr black hole*, *Phys. Rev.* D **75** 024005.

12. **Gair**, **J R** and Glampedakis, K, 2006, *Improved approximate inspirals of test-bodies into Kerr black holes*, *Phys. Rev.* D**73** 064037.

13. **Gair**, **J R**, Kennefick, D J and Larson, S L, 2006, *Gravitational radiation timescales for extreme mass ratio inspirals*, *Astrophys. J* **639** 999.

14. **Gair**, **J R**, Kennefick, D J and Larson, S L, 2005, *Semi-relativistic approximation to gravitational radiation from encounters with nonspinning black holes*, *Phys. Rev.* D**72** 084009.

15. **Gair**, **J R** and Wen, L, 2005, *Detecting extreme mass ratio inspirals with LISA using time-frequency methods II: search characterization*, *Class. Quantum Grav.* **22** S1359-S1371.

16. Wen, L and **Gair**, **J R**, 2005, *Detecting extreme mass ratio inspirals with LISA using time-frequency methods*, *Class. Quantum Grav.* **22** S445-S452.

17. Kesden, M, **Gair**, **J R** and Kamionkowski, M, 2005, *Gravitational-Wave Signature of an Inspiral into a Supermassive Horizonless Object*, *Phys. Rev.* D**71** 044015

18. **Gair**, **J R**, Barack, L, Creighton, T, Cutler, C, Larson, S L, Phinney, E S and Vallisneri, M, 2004, *Event rate estimates for LISA extreme mass ratio capture sources*, *Class. Quantum Grav.* **21** S1595-S1606

19. **Gair**, **J R**, 2002, *Kantowski-Sachs universes with counter-rotating dust*, *Class. Quantum Grav.* **19** 6345-6358.

20. **Gair**, **J R**, 2002, *Some radiation universes which generalize Vaidya*, *Class. Quantum Grav.* **19** 3883-3899.

21. **Gair**, **J R**, 2002, *Self-similar spherical metrics with tangential pressure*, *Class. Quantum Grav.* **19** 2079-2106.

22. **Gair**, **J R**, 2001, *Spherical universes with anisotropic pressure*, *Class. Quantum Grav.* **18** 4897-4919.

Recent Talks

- *Zoom and Whirl: probing black holes using extreme-mass-ratio inspirals.* Colloquium at Queen Mary and Westfield University, June 2007.
- *Detection of LISA sources using time-frequency techniques* and *Approximate waveform templates for the detection of extreme mass ratio inspirals with LISA*. Talks at the 11th Marcel Grossmann meeting, Berlin, July 2006.
- *Testing the black hole no-hair theorem using LIGO extreme mass ratio inspiral events.* Talk at "Testing gravity in the next decade" workshop, Birmingham, March 2006.
- *Extreme mass ratio inspirals — a high precision probe of astophysical black holes.* Colloquium at Birmingham University, March 2006.
- *The Black Hole Symphony — listening to the Universe with gravitational waves.* Research seminar for graduate students and fellows at St.Catharine's College, November 2005.

Teaching Experience

- Lectured for the 'Singaporean Enrichment Programme' summer school at Girton College, Cambridge 2006.
- Supervisor for various courses in the Physics and Mathematics Tripos at the University of Cambridge, including 'Classical Field Theory and Gravitation' (2006), 'General Relativity' (2006), 'Astrophysics and Cosmology' (2004-2006), 'Structure and Evolution of Stars' (1999-2000), 'Electromagnetism' (2001, 2005-2007) and 'Dynamics' (2006-2007).
- Assessed Part IB Mathematics computer projects at University of Cambridge (2000).

Computing Skills

- Extensive experience of UNIX and DOS based operating systems, LaTeX, Mathematica, IDL and various computer languages, including Fortran and HTML.
- Webmaster for St.Catharine's College, Cambridge, responsible for maintaining and updating the College website (March 2006 - present).