

# Tom Kimpson

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## Education

- 2016–Present **PhD., Theoretical Astrophysics**, Mullard Space Science Laboratory, University College London, UK.  
Thesis: Multimessenger astrophysics of pulsars in EMRI/IMRI systems  
Supervisors: Prof. Kinwah Wu, Prof. Silvia Zane
- 2012–2016 **MPhys., Physics and Astronomy**, Durham University, UK, .  
First Class Honours.  
Supervisor: Prof. Paula Chadwick.

## Publications

- Kimpson, T.**, Wu, K., Zane, S. (–). *The Post-Keplerian approximation in the strong-field regime*. IN PREP.
- Kimpson, T.**, Wu, K., Zane, S. (2019). *Pulsar timing in extreme mass ratio binaries: a general relativistic approach.*, MNRAS [doi:10.1093/mnras/stz845](https://doi.org/10.1093/mnras/stz845)
- Kimpson, T.**, Wu, K., Zane, S. (2019). *Spatial Dispersion of light rays propagating through cold plasma in Kerr spacetime*. MNRAS [doi:10.1093/mnras/stz138](https://doi.org/10.1093/mnras/stz138)
- Kimpson, T.**, Spera, M. , Mapelli, M., Ziosi, B., (2016). *Hierarchical black hole triples in young star clusters: impact of Kozai-Lidov resonance on mergers*. MNRAS [doi:10.1093/mnras/stw2085](https://doi.org/10.1093/mnras/stw2085)

## Research Interests

Multimessenger astrophysics and strong-field General Relativity. Recent work has examined the use of Extreme Mass Ratio Pulsar-Black hole binaries for tests of fundamental physics and astrophysics, and dynamical effects in triple systems with implications for gravitational wave emission. Other interests include gravitational astrophysics of Extreme Mass Ratio Inspirals and pulsar orbital parameterization in strong-field environments.

## Additional Research Experience

- March 2018 **Scientific Visit**, INAF CAGLIARI, Italy.
- June – Sept **Research Scientist**, PACE, London.
- 2016 Early-hire at start-up using machine learning methods for dynamic pricing and revenue optimization. Independently researched and implemented Bayesian machine learning and reinforcement learning algorithms.

June – Sept 2015 **Research Associate**, INAF PADOVA & PADOVA UNIVERSITY, Italy.  
*Host: Michela Mapelli.*  
Research within the Formation and Dynamics of Stars group investigating the formation and evolution of triple systems, the merger of compact objects, the effects of Kozai-Lidov oscillations on the merger rate and the implications for gravitational wave emission.

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## Talks

July 2019 22nd International Conference on General Relativity and Gravitation, Valencia  
**Multimessenger astrophysics of Pulsar EMRBs.** Abstract accepted.

July 2019 National Astronomy Meeting, Lancaster  
**Pulsar Timing in Extreme Mass Ratio Binaries.** Abstract accepted.

June 2019 Computational Sciences in the 21st Century, London  
**Modelling in the gravitational strong field.** Abstract submitted.

May 2019 Science Possibilities Investigating Neutron Stars, London  
**Pulsars as probes of strong-field GR.** Abstract accepted.

Jan 2019 Mullard Space Science Laboratory, UCL  
**General Relativistic Pulsar Timing.**

March 2018 INAF Cagliari, Italy  
**Spatial dispersion in the strong-field: implications for PSR timing**

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## Honours, Grants & Awards

2019 Royal Astronomical Society Grant

2019 MSSL Travel Award (declined)

2019 UCL Studentship Award  
*Competitive application for additional PhD funding*

2018 PHAROS Grant  
*European Cooperation in Science and Technology*

2018 Finalist  
*UCL Research Images as Art*

2016 STFC PhD Studentship  
*Science and Technology Facilities Council*

2015 Erasmus+ Grant  
*Erasmus+ & European Commission*

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## Service and Memberships

Full Member LISA Consortium

Fellow Royal Astronomical Society

Full Member SPINS-UK Consortium

May 2019 **Local Organizing Committee.**  
SPINS-UK Conference, London

Jan 2018 – **Seminar Organizer**  
Present MSSL, UCL

Jan 2018 – **Journal Club Organizer**  
Present MSSL, UCL

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## Teaching

Sept 2018 **Primary Supervisor**, *Aimi Kusudo*, Visiting Undergraduate.  
June – Sept 2018 **Secondary Supervisor**, *Adam Moon*, Nuffield Research Student.  
Sept 2017 – **Teaching Assistant**, *High Energy Astrophysics, UCL*.  
Present

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## Additional Conferences and Courses

Nov 2018 LISA Consortium Conference, Marseille  
May 2018 SPINS-UK Conference, Norwich  
July 2018 ICE Gravitational Wave Summer School, Barcelona  
May 2018 The Gravitational Wave Binary Black Hole and Neutron Star Opportunity for Astronomy, London  
Sept 2017 The Promises of Gravitational-Wave Astronomy, London  
March 2017 Green Bank Telescope Observer Training Workshop, West Virginia.

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## Computer skills

Languages FORTRAN, PYTHON, Mathematica  
Scientific Tools OpenMP, GNU Parallel, Git, TEMPO,  $\text{\LaTeX}$