

Tom Kimpson

Mullard Space Science Laboratory
RH5 6NT, UK
☎ +44 7720 385 245
✉ tom.kimpson.16@ucl.ac.uk
🌐 tomkimpson.com

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. First Class Honours, Physics and Astronomy**, Durham University, UK.
Supervisor: Prof. Paula Chadwick.

Publications

- Kimpson, T.**, Wu, K., Zane, S. (–). *Modelling pulsar binaries in the gravitational 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 **Research Associate**, INAF PADOVA & PADOVA UNIVERSITY, Italy.
- 2015 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.

Talks

- July 2019 **Multimessenger astrophysics of Pulsar EMRBs**
22nd International Conference on General Relativity and Gravitation, Valencia
- July 2019 **Pulsar Timing in Extreme Mass Ratio Binaries**
National Astronomy Meeting, Lancaster
- June 2019 **Modelling in the gravitational strong field**
Computational Sciences in the 21st Century, London
- May 2019 **Pulsars as probes of strong-field GR**
Science Possibilities Investigating Neutron Stars, London
- Jan 2019 **General Relativistic Pulsar Timing**
Mullard Space Science Laboratory, UCL
- March 2018 **Spatial dispersion in the strong-field: Implications for PSR timing**
INAF Cagliari, Italy

Honours, Grants & Awards

- 2019 **PI Visiting Graduate Fellowship**
Perimeter Institute for Theoretical Physics
- 2019 **Royal Astronomical Society Grant**
- 2019 **MSSL Travel Award**
- 2019 **UCL Studentship Award**
- 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

Service and Memberships

- May 2019 **Local Organizing Committee.**
SPINS-UK Conference, London
- Jan 2018 – **Seminar Chair**
Present MSSL, UCL
- Jan 2018 – **Journal Club Chair**
Present MSSL, UCL
- Memberships LISA Consortium, Royal Astronomical Society, SPINS-UK Consortium

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

Computer skills

Languages PYTHON, FORTRAN, Mathematica

Tools OpenMP, GNU Parallel, Git, TEMPO, L^AT_EX

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.