

# Tom Kimpson

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## Education

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- PhD. Theoretical Astrophysics**, University College London, UK 2016–Present  
- Thesis: *Multimessenger astrophysics of pulsars in EMRI/IMRI systems*.  
- Supervisors: Prof. K. Wu, Prof. S. Zane
- MPhys. Physics, First-class Honours**, Durham University, UK 2012–2016  
- Thesis advisors: Prof. P. Chadwick, Dr. A. Brown

## Research Interests

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Multimessenger pulsar astronomy, strong-field general relativity and gravitational wave astrophysics. Recent work has explored the detection of pulsar-black hole binaries, and the use of these systems for tests of fundamental physics and astrophysics.

## Publications

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- Kimpson, T.**, Yang, H. (-). *Waveforms from Hierarchical Triples for LISA*, In prep.
- Kimpson, T.**, Wu, K., Zane, S. (2020). *Radio Timing in an MSP-E/IMRB System*, Submitted to A&A
- Kimpson, T.**, Wu, K., Zane, S. (2020). *Orbital spin dynamics of a millisecond pulsar around a massive black hole with an general mass quadrupole*, Accepted for publication in MNRAS [arxiv.org/abs/2007.05219](https://arxiv.org/abs/2007.05219)
- Kimpson, T.**, Wu, K., Zane, S. (2020). *Gravitational Burst Radiation from Pulsars in the Galactic centre and stellar clusters*, MNRAS [doi:10.1093/mnras/staa1259](https://doi.org/10.1093/mnras/staa1259)
- Barausse et al. including **Kimpson, T.**, (2019). *Prospects for Fundamental Physics with LISA* [arxiv.org/abs/2001.09793](https://arxiv.org/abs/2001.09793)
- 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 a 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)

## Additional Research Experience

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- Data Scientist, Intern**, Shopify, Canada May 2020 – Aug. 2020
- Visiting Graduate Fellow**, Perimeter Institute for Theoretical Physics, Canada Oct. 2019 – March 2020
- Research Scientist**, Pace (*machine learning start-up*), London June 2016 – Sept. 2016
- Summer Research Intern**, INAF Padova & Padova University, Italy June 2015 – Sept. 2015

## Honours, Grants & Awards

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- Visiting Graduate Fellowship, Perimeter Institute for Theoretical Physics 2019
- Royal Astronomical Society Travel Grant 2019
- MSSL Travel Award 2019
- UCL Studentship Award 2019
- STSM Grant, PHAROS COST Action 2019
- Finalist, UCL Research Images as Art 2018
- STFC PhD Studentship, Science and Technology Facilities Council 2016
- Erasmus+ Grant, Erasmus+ & the European Commission 2015

## Talks

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<i>Fundamental Physics with MSP-BH Systems</i> , Perimeter Institute Strong Gravity Meeting	Jan. 2020
<i>Multimessenger astrophysics of Pulsar Binaries</i> , GR22, Valencia	July 2019
<i>Pulsar Timing in Extreme Mass Ratio Binaries</i> , National Astronomy Meeting, Lancaster	July 2019
<i>Modelling in the gravitational strong field</i> (Poster), Computational Sciences in the 21st Century, London	June 2019
<i>Pulsars as probes of strong-field GR</i> , Gravitational Waves @ UCL	June 2019
<i>Strong-field pulsar timing</i> , SPINS-UK, London	May 2019
<i>General Relativistic Pulsar Timing</i> , Mullard Space Science Laboratory, UCL, London	Jan 2019
<i>Spatial dispersion in the strong-field: Implications for PSR timing</i> , INAF Cagliari, Italy	March 2018

## Teaching

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Aimi Kusudo, Visiting Undergraduate, UCL, Primary Supervisor	Sept 2018
Adam Moon, Nuffield Research Student, UCL, Secondary Supervisor	June - Sept 2018
Teaching Assistant, High Energy Astrophysics, UCL	Winter Term 2017,2018

## Service and Memberships

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Local Organizing Committee, SPINS-UK Conference, London	May 2019
LISA Consortium	Sept 2018
SPINS-UK Consortium	May 2018
Seminar Chair, Mullard Space Science Laboratory, UCL	Jan. 2018-Sept 2019
Journal Club Chair, Mullard Space Science Laboratory, UCL	Jan. 2018-Sept 2019

## Computing Skills

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**Programming Languages:** Python, Fortran, Mathematica, Bash, SQL  
**Tools:** OpenMP, GNU Parallel, Git, TEMPO, L<sup>A</sup>T<sub>E</sub>X, Linux

## Additional Conference and Courses

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