

Tom Kimpson

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Education

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

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

Publications

Kimpson, T., Yang, H. (–). *Waveforms from Hierarchical Triples for LISA*, In prep.

Kimpson, T., Wu, K., Zane, S. (2020). *Orbital spin dynamics of a millisecond pulsar around a massive black hole with an general mass quadrupole*, Submitted to MNRAS

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). *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.**, (2020). *Prospects for Fundamental Physics with LISA*, 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 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)

Additional Research Experience

Data Scientist, Shopify, Canada

May 2020 – Aug. 2020

Visiting Graduate Fellow, Perimeter Institute for Theoretical Physics, Canada

Oct. 2019 – March 2020

Research Scientist, Pace Revenue Management, London

June 2016 – Sept. 2016

Research Intern, INAF Padova & Padova University, Italy

June 2015 – Sept. 2015

Talks

Fundamental Physics with MSP-BH Systems, Perimeter Institute Strong Gravity Meeting

Jan. 2020

Multimessenger astrophysics of Pulsar Binaries, GR22, Valencia

July 2019

Pulsar Timing in Extreme Mass Ratio Binaries, National Astronomy Meeting, Lancaster

July 2019

Modelling in the gravitational strong field(Poster), Computational Sciences in the 21st Century, London

June 2019

Pulsars as probes of strong-field GR, Gravitational Waves @ UCL

June 2019

Strong-field pulsar timing, SPINS-UK, London

May 2019

General Relativistic Pulsar Timing, Mullard Space Science Laboratory, UCL, London

Jan 2019

Spatial dispersion in the strong-field: Implications for PSR timing, INAF Cagliari, Italy

March 2018

Honours, Grants & Awards

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

Service and Memberships

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

Teaching

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, Secondary Supervisor	Winter Term 2017,2018

Computing Skills

Programming Languages: Python, Fortran, Mathematica, Bash, SQL
Tools: OpenMP, GNU Parallel, Git, TEMPO, \LaTeX

Additional Conference and Courses

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