Tom Kimpson

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EDUCATION

2016 – PRESENT **PhD Candidate**
Theoretical Astrophysics
Mullard Space Science Laboratory, UCL

2012 – 2016 **MPhys (Hons.)**
FIRST CLASS HONOURS
Physics and Astronomy
Durham University

PUBLICATIONS

Kimpson, T., Wu, K., Zane, S. (–). The Post-Keplerian approximation in the strong-field regime *In prep.*

Kimpson, T., Wu, K., Zane, S. (2018). *Pulsar timing in extreme mass ratio binaries: a general relativistic approach.* Submitted MNRAS.

Kimpson, T., Wu, K., Zane, S. (2018). *Spatial Dispersion of light rays propagating through cold plasma in Kerr spacetime.* MNRAS, doi: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

RESEARCH EXPERIENCE

JUNE – SEPTEMBER 2016 (INTERNSHIP)

Pace
Data Scientist

Early-hire at start-up using machine learning methods for dynamic pricing and revenue optimization in the SME market-space. Independently researched and implemented Bayesian machine learning and reinforcement learning algorithms, including Multi-armed bandit and Q-learning methods.

JUNE – SEPTEMBER 2015 (INTERNSHIP)

INAF Padova & Padova University
Research Associate

Research within the Formation and Dynamics of Stars group investigating the merger of compact objects and the implications for gravitational wave emission. – Use of leading N-body code to simulate the formation and evolution of triple systems. – Calculation of increase in black hole merger rate due to Kozai-Lidov oscillations.

Additional Experience

JUNE 2018 ICE Gravitational Wave Summer School
MARCH 2018 INAF Cagliari Scientific Visit
JUNE 2017 Green Bank Observatory Training Workshop

PRESENTATIONS

MSSL, UCL General Relativistic Pulsar Timing
January 2019
INAF CAGLIARI Extreme Mass Ratio Pulsar-Black Hole Binaries.
March 2018

DOCTORAL RESEARCH

"On the detection and timing of Extreme Mass Ratio Binaries as probes of Strong-field GR"

My primary research involves theoretical work on Extreme Mass Ratio Pulsar-Black hole binaries. Such systems may exist and the centre of Galaxies or Globular Clusters and provide and ideal testing ground for general relativity in the strong-field regime.
In particular my research is concerned with the time-frequency signal from a PSR in a relativistic orbit around a massive black hole. Such work is essential to both inform the detection of such systems, and to provide a theoretical framework which can then be compared with observations for tests of GR.

GRANTS & AWARDS

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

2018 **PHAROS Grant**
European Cooperation in Science and Technology

2016 **STFC PhD Studentship**
Science and Technologies Facilities Council

2015 **Erasmus+ Grant**
Erasmus+ & European Commission

COMPUTER SKILLS

LANGUAGES Python, Fortran, Mathematica
SCIENTIFIC TOOLS OpenMP, GNU Parallel, Git, Fermi Science Tools, TEMPO, LaTeX

ACADEMIC SERVICE

CHAIR MSSL Seminar series
2018 - present
CHAIR MSSL Journal Club
2017 - 2019
FULL MEMBER LISA Consortium
MEMBER Royal Astronomical Society

TEACHING

POSTGRADUATE MARKER UCL High Energy Astrophysics
2017, 2018
PRIMARY SUPERVISOR Aimi Kusudo. KSU Japan.
September 2018
SECONDARY SUPERVISOR Adam Moon. Nuffield Student
Summer 2018