

# Payel Das

## Curriculum Vitae

Rudolf Peierls Centre for Theoretical Physics

OX1 3PU Oxford UK

+44 (0)7970 147984

+44 (0)1865 613974

✉ [payel.das@physics.ox.ac.uk](mailto:payel.das@physics.ox.ac.uk)

🌐 <https://drpayeldas.com/>

### Education

- 11/07–04/11 **PhD Astrophysics**, *Max Planck Institute for Extraterrestrial Physics (MPE)*, Garching, *Magna Cum Laude*.  
Thesis: The outer haloes of nearby, massive elliptical galaxies  
Supervisor: Ortwin Gerhard.
- 09/06–10/07 **Half-diploma Astrophysics**, *MPE*, Garching.  
Thesis: The orbital structure of the massive elliptical galaxy NGC 5846  
Supervisor: Ortwin Gerhard.
- 09/02–06/06 **MPhys Physics**, *University of Oxford*, Oxford, *1st*.  
Specialised in Theoretical Physics and Astrophysics in 4<sup>th</sup> year.  
Thesis: The use of kinemetry as a technique for extracting 2-D kinematics from SAURON velocity dispersion maps  
Supervisor: Roger Davies.

### Employment

- 04/19–09/19 **Maternity leave**.  
04/18– **Postdoc**, *Rudolf Peierls Centre for Theoretical Physics, University of Oxford*, Oxford.  
Project: Extracting science from Galaxy surveys, STFC Consolidated Grant ST/N000919/1  
Line manager: John Magorrian
- 11/16–04/17 **Maternity leave**.
- 09/14–03/18 **Postdoc**, *Rudolf Peierls Centre for Theoretical Physics, University of Oxford*, Oxford.  
Project: Extracting science from surveys of our Galaxy, ERC FP7/2007-2013 (321067)  
Line manager: James Binney.
- 05/11–08/14 **Postdoc**, *Institute for Environmental Design and Engineering (IEDE), University College London (UCL)*, London.  
Project: Public health impacts in URban environments of Greenhouse gas Emissions reductions strategies, EPSRC EP/I02929X/1  
Line manager: Michael Davies

### Teaching

Primary supervisor

- 10/16-06/19 **Master's theses**, *Department of Physics, University of Oxford*, Oxford.  
Project 1 (Andrew Overall): The origin of streams in our Solar Neighbourhood  
Project 2 (Kishan Makwana): Applying machine-learning techniques to predict stellar parameters from low-resolution spectra
- 06/15-09/18 **Summer projects**, *Department of Physics, University of Oxford*, Oxford.  
Project 1 (Brian Khor): Angle mapping via phase-space sampling in the isochrone potential  
Project 2 (Paula Gherghinescu): Ages of dwarf stars using machine learning
- 09/13-08/14 **Master's theses**, *IEDE, UCL*, London.  
Three projects on the application of uncertainty analyses, sensitivity analyses and multi-objective assessments to the healthy retrofitting of housing stock in England and India.

Co-supervisor

- 09/12–02/17 **PhD theses**, *IEDE, UCL*, London.  
Project 1 (Emily Nix): Housing health and energy use in low-income settings: employing building science to evaluate housing improvements in Delhi, India  
Project 2 (Greig Paterson): Real-time energy use predictions at the early architectural design stages with machine learning

Small-group teaching

- 10/14–06/18 **Undergraduate tutor**, *St. Edmund Hall and Somerville College, University of Oxford, Oxford.*  
1<sup>st</sup>-year Mechanics and Special Relativity, 2<sup>nd</sup>-year Quantum Mechanics, and 3<sup>rd</sup>-year Symmetry and Relativity.
- 05/13–08/14 **Statistics Surgery**, *IEDE, UCL, London.*  
Fortnightly surgeries to assist Master's and PhD students to apply uncertainty, sensitivity, and machine learning methods with building physics models.  
Lectures
- 01/12–01/14 **Lectures**, *IEDE, UCL, London.*  
Annual three-hour lecture on 'Uncertainty and sensitivity analyses' for the Environmental Design and Engineering Master's course.

## Awards

### Prizes and scholarships

- 10/15–09/18 **JMH Junior Research Fellowship**, *Linacre College, Oxford.*  
Provided meals at college and a research allowance, ~£5000/year.
- 11/07–04/11 **International Max Planck Research School PhD scholarship**, *Max Planck Society, Germany.*
- 09/06–10/07 **Marie Curie half-diploma fellowship**, *European Commission.*
- 06/04 **Scott Prize**, *University of Oxford, Oxford.*  
Performance in 2<sup>nd</sup>-year Teaching Physics module.
- 09/03–06/06 **Open Scholarship**, *University of Oxford, Oxford.*  
Performance in 2<sup>nd</sup>-, 3<sup>rd</sup>-, and 4<sup>th</sup>-year Finals.

### Grants

- 03/19–04/19 **Returning Carers Fund**, *Mathematical, Physical and Life Sciences Division, Oxford.*  
Awarded ~£6000 to fund a research assistant for two months.
- 03/18 **Gaia sprint grant**, *Rudolf Peierls Centre for Theoretical Physics, Oxford.*  
Granted £1000 for organizing a collaborative workshop.
- 08/18–09/18 **Summer student research grant**, *Linacre College, Oxford.*  
Awarded £700 to contribute to the research carried out by a summer student.
- 07/17-08/17 **Returning Carers Fund**, *Mathematical, Physical and Life Sciences Division, Oxford.*  
Awarded ~£6000 to fund a research assistant for two months.

### Observing and computing

- 03/19 **Telescope observing time**, *McDonald Observatory, Texas, USA.*  
Six nights granted on the 2.7m Harlan J. Smith Telescope as co-investigator.
- 12/18 **Telescope observing time**, *The Chilean Telescope Time Allocation Committee, Chile.*  
Two nights granted on the 6.5m Clay Telescope at the Las Campanas Observatory as co-investigator.
- 05/18–04/21 **High performance computing time**, *Distributed Research utilizing Advanced Computing.*  
Awarded 11.19 million hours (~£230,000) of HPC time as co-investigator.

## Research talks

### Invited colloquia/seminars

- 02/19 Astrophysics Research Institute, University of Liverpool, Liverpool.
- 11/18 Department of Astrophysics, University of Columbia, New York.
- 02/19 Astrophysics Observatory, University of Strasbourg, Strasbourg.
- 12/17 Astrophysics and Space Research group, University of Birmingham, Birmingham.
- 09/16 Mullard Space Science Laboratory, UCL, Dorking.
- 08/16 University of Surrey, Guilford.
- 08/16 National Astronomical Observatory of Japan, Tokyo.
- 07/16 Institute of Astronomy, Cambridge
- 06/15 Max-Planck Institute for Astronomy, Heidelberg.
- 10/10 Department of Physics, University of Oxford, Oxford.

05/10 Centre for Astrophysics, Hertfordshire.  
01/10 Mount Stromlo Observatory, Canberra.

#### Conferences/workshops

09/17 'Weighing Stars from Birth to Death: How to Determine Stellar Masses?' workshop at University of Leiden, Leiden  
09/17 'The science of Gaia and future challenges' conference at University of Lund, Lund  
07/17 'National Astronomy Meeting' conference at University of Hull, Hull  
07/15 'Stellar streams in the Local Universe' workshop, Ringberg Castle, Bavaria.  
06/14 'Building Simulation Optimization Conference' at UCL, London.  
06/14 'UK Indoor Environments Group Conference', University of Leeds, Leeds.  
09/13 '2<sup>nd</sup> Central European Symposium on Building Physics' Vienna.  
08/09 'IAU XXVII General Assembly', Rio de Janeiro.  
03/08 'Galactic and stellar dynamics in the era of high-resolution surveys' conference, Strasbourg.

#### Public engagement and media

02/19 **Institute of Physics talk**, *Sarum College*, Salisbury.  
Introduction to 'Galactic Archaeology' using methods from evolutionary biology.  
01/19 **Stratford-upon-Avon Astronomical Society talk**, *Alderminster Village Hall*, Stratford-upon-Avon.  
Discussion of 'Galactic Archaeology' with data from the Gaia satellite.  
07/18 **Royal Society Summer Science Exhibition**, *Royal Society*, London.  
Contribution to a Gaia exhibit, one of 22 selected exhibits aimed towards a public audience.  
05/18 **BBC Sky at Night**.  
Discussed work with Gaia data.  
02/18 **New Scientist**.  
Feature article: Suns and daughters: The family tree that may unite all the stars  
03/17 **Scientific American**.  
Feature article: Galactica stellaris: Astronomers build a family tree for the Milky Way's stars  
09/16 **Outreach day**, *Marlborough College*, Marlborough.  
Assisted GCSE and A-Level physics classes, and gave public lecture on 'Galactic Archaeology'.  
08/16 **Oxford Pathways Programme**, *St. Hilda's College, University of Oxford*, Oxford.  
Lecture on 'Galactic Archaeology' to 15 and 16-yr old students.  
02/16 **Work experience placement**, *Department of Astrophysics, University of Oxford*, Oxford.  
Supervised GCSE student for a week on 'Understanding galaxies'.  
01/10 **National Mathematics Summer School**, *Mount Stromlo Observatory*, Canberra.  
Lecture on 'Stellar orbits' to 15 and 16-yr old mathematics students.

#### Relevant skills, experience, and service

##### Large collaborations and working groups

07/17- **Theia Consortium**.  
Member of dark matter working group for the Theia Space Mission.  
09/15- **Gaia Challenge**.  
Member of spherical/triaxial systems and streams and halo stars working groups.  
09/06-04/11 **Planetary Nebula Spectrograph**.  
Member of collaboration.

##### Research community service

Referee for ApJ, MNRAS, Building and Environment, and Indoor Air  
Local organizing committee for satellite Gaia sprint

##### Programming

Linux, Latex, Fortran, C++, Python, Matlab