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Future Fluid Dynamics

Research Internship Programme

Candidate brief

Dynamic Accretion Discs in Astrophysics

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Access to Research

Dynamic Accretion Discs in Astrophysics

Project supervisors: Dr Chris Nixon
Department: School of Physics & Astronomy

Duration: 6 weeks FT (or PT equivalent)
Start date: June 2025
Stipend: £3,517
Location: University of Leeds campus

Project summary

Accretion discs are a basic building block of many astrophysical systems. The discs that are observed around young stars are where planets form, and those found around white dwarfs, neutron stars and black holes generate spectacular luminosities and variability. It is now possible to develop sophisticated numerical models for the behaviour of these discs, but there is still much to be understood.

This project seeks to develop our understanding of accretion disc dynamics through both analytical and numerical modelling. The aim is to develop theoretical models that can be used to understand observational data from accreting systems. Accretion discs are fundamental to many astrophysical systems, so we anticipate applying these models to a range of systems from protoplanetary discs around young stars to matter orbiting black holes.

Developmental benefits

- Develop understanding of fluid dynamics in an astrophysical context
- Develop computational skills through using parallelized code on local multi-core machines and high-performance computing facilities
- Develop experience with data analysis methods
- Exposure to cutting edge research methods and result

Essential criteria

Applicants to this project should have:

- An interest and enthusiasm for the general topic
- Prior knowledge and expertise in applied maths or fluid dynamics or
- Computing
- Good time management skills

Who should apply

On order to be considered for this opportunity, applicants must be eligible for the **Home (UK) rate of postgraduate academic fees**, must **not** have previously undertaken a research internship with the Leeds Centre for Doctoral Training in Future Fluid Dynamics **and meet one or more** of the below criteria:

- First in family to go to university
- From a Black, Asian or other minoritised ethnic group
- Neurodivergent (e.g. ASD, ADHD) and/or Disability (e.g. physical impairments, mental health condition, learning difficulties, chronic illness)
- Identify as female
- Have caring responsibilities
- Have been outside of education for 5 or more years
- Studying/studied at a university that is not a member of the Russell Group*

If you have any questions or would like to discuss your eligibility, please contact pgrdiversity@leeds.ac.uk

How to apply

Before making an application, you should review the essential and eligibility criteria above. Please note that if you do not meet the stated eligibility criteria your application will not be shared with the shortlisting panel for review.

You can submit your application by completing the form below:

Future Fluid Dynamics Internship Programme (2025): Application form

Applications close at 23:59 on Friday 31 January 2025.

If you have any questions about your application, please contact Emily Bryan-Kinns by email at e.bryan-kinns@leeds.ac.uk.

If you require information for disabled applicants, or would like to request alternative formats, please contact the PGR Diversity Team by email at pgrdiversity@leeds.ac.uk.