Characterisation of energetic transients across the spectrum

Project Description

In this project you will study the biggest explosions in the Universe, with the biggest telescopes on Earth. The transient Universe has brought many unexpected advances in astrophysics in recent years, from discoveries of gravitational waves and their electromagnetic counterparts to new populations of ultralong gamma-ray bursts and relativistic tidal disruption events.

Exploration of these dynamic populations relies upon the acquisition of data of new examples that follows both the temporal and spectral evolution. This project will enable you to be part of well established international collaborations at world-class observing facilities, as well as present opportunities to lead your own proposals and contribute to defining new strategies to obtain such multi wavelength, high cadence coverage.

Our follow-up of gamma-ray bursts and other transients has led to numerous exciting results with the European Southern Observatory Very Large Telescope and the Isaac Newton Group telescopes from the ground. The University of Leicester leads the UK science data centre for the NASA Swift satellite, which is the premier detection facility for gamma-ray bursts currently in space. A new avenue opening up is the ability to carry out rapid response observations with the LOFAR radio array. Combining radio data with X-ray and optical information will be a powerful tool to reveal physics of the central engines of these extreme events where accretion onto compact objects can power fast outflows, as well as building a picture of the environments in which these events occur.
References

1. The X-shooter GRB afterglow legacy sample - Astronomy and Astrophysics, 2019, 623: http://hdl.handle.net/2381/44624
4. X-ray absorption evolution in gamma-ray bursts: intergalactic medium or evolutionary signature of their host galaxies?

Application Instructions

When applying, please ensure we have received all of the following required documents by Wednesday 29th January 2020:

- Submit an online application form https://le.ac.uk/study/research-degrees/funded-opportunities/stfc-studentships
- 2 academic references
- STFC Research Interests Form
- CV
- Undergraduate transcripts
  - If you have completed your undergraduate degree, we will also require your undergraduate degree certificate
  - If you have completed a postgraduate degree, we will also require your transcripts and degree certificate

If we do not have the required documents by the closing date, your application may not be considered for the studentship.