

Optical transient surveys of today and tomorrow : machine learning applications

Tuesday 18 September 2018 10:30 (20 minutes)

Prof. Stephen J. Smartt, Astrophysics Research Centre
School of Mathematics and Physics, Queen's University Belfast

Abstract: Wide-field optical telescopes routinely employ large format detectors (CCDs) with 0.1 to 1 gigapixels which provide images every 30 seconds. Such facilities are capable of surveying the whole sky every night and the scientific exploitation requires immediate processing of the data together with selection of real astrophysical transients and association with all catalogues of stars, galaxies, asteroids and all multi-wavelength surveys (gamma ray to radio) that exist. Machine learning is now playing a critical role in this field and I will describe some of the applications currently being employed and what the challenges are for the next major facility –the Large Synoptic Survey Telescope.

Bio: Stephen Smartt is an astrophysicist at Queen's University Belfast working on time domain surveys of the sky in the optical and infra-red wavelengths. His scientific interest is finding extreme types of exploding, merging and erupting stars in these sky surveys in real time to allow larger facilities on the ground and in space to be triggered rapidly. This involves application of machine learning techniques and algorithms to create billion row database catalogues and select objects from their catalogued properties.

Presenter: Prof. SMARTT, Stephen

Session Classification: Day 2