



Western

**Western University**  
**Department of Physics and Astronomy**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date:** **TUESDAY, 12<sup>th</sup> June 2018**

**Time:** **1:30 p.m.**

**Location:** **Physics & Astronomy Seminar Room 100**

**Max Joshua**

Blue Skies Space Ltd.  
London U.K.

### ***“Twinkle – a low-Earth orbit visible and infrared exoplanet spectroscopy observatory”***

#### **ABSTRACT**

Twinkle is a small, dedicated satellite that has been conceived to measure the atmospheric composition of exoplanets. This cost-effective spacecraft is being constructed on a short timescale in the UK and is planned for launch in late 2021/early 2022. The satellite uses an existing platform designed by Surrey Satellite Technology Ltd. and instrumentation built by a consortium of UK institutes. Twinkle will carry a 45cm telescope with two instruments (visible and near-IR spectrographs - between 0.4 and 4.5 $\mu$ m with resolving power up to R=300) and will follow a Sun-synchronous low-Earth polar orbit. The mission implementation is based upon a commercial delivery approach that has been successfully applied in other demanding space disciplines by the satellite platform supplier.

Twinkle's science cases include observations of transiting exoplanets and of solar system objects. Twinkle will use visible and infrared spectroscopy to analyse the chemical composition and weather of at least 100 exoplanets in the Milky Way, including super-Earths (rocky planets 1-10 times the mass of Earth), Neptunes, sub-Neptunes and gas giants like Jupiter. It will also be capable of follow-up photometric observations of 1000+ exoplanets. The exoplanet targets observed by Twinkle will be composed of known exoplanets discovered by existing and upcoming ground- and space-based surveys (e.g. K2, GAIA, Cheops, TESS). Solar system objects ideally suited for spectroscopic and photometric observations with Twinkle include asteroids and comet comae - Twinkle's broad wavelength range will allow the observation of key hydration, organic and volatile features in their spectra.

This presentation will provide a summary of the mission and the approach taken. For more information, visit <http://www.twinkle-spacemission.co.uk/>.

***COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.***