

From Macro to Micro Stellar Transits

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SCIENTIFIC RATIONALE

Stellar transits provide us fundamental information about planets, stars, and the properties of disks: geometrical sizes, dynamical masses, bulk densities, inclinations of orbital axis with respect to rotational axis, apsidal motions, centre-to-limb darkening, and circumstellar disk structure. Those properties are crucial ingredient in the understanding of the formation and evolution of stars and the planetary systems around them.

Great progress has been made and will be made in the study of stellar transits through observations and theory, particularly with the successful operation of the COROT and KEPLER space missions. Thus, the time is right for a meeting to focus on the observational and theoretical aspects of transits in stars, with the programme centred around four topical questions:

- Stellar eclipses: what have we learned from them across the H-R diagram and what is the connection with current observations that focus on exoplanets?
- Planetary transits: why is there a large spread in the mass-density relationship of transiting exoplanets? How could we find transiting habitable planets?
- Atmospheres of transiting planets and biomarkers: what information do we have about planet spectra and how does it compare to brown dwarf spectra? What should we do for being prepared to get transmission spectroscopy of habitable exoplanets?
- Disk transits: what is the connection between disk structures and planetary and stellar companions?

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