

## SPICA: Mid-IR exoplanet spectroscopy in Space

**I. P. Waldmann** (1), B. Swinyard (1,2), E. Pascale (3), M. Tessonnyi (1) and G. Tinetti (1)

(1) University College London, Dept. Physics & Astronomy, Gower Street, WC1E 6BT, London, UK (ingo@star.ucl.ac.uk)

(2) Rutherford Appleton Laboratory, STFC, Polaris House, North Star Avenue, SN2 1SZ, Swindon, UK

(3) Cardiff University, School of Physics & Astronomy, Queen's Building, The Parade, CF24 3AA, Cardiff, UK

### Abstract

In less than three decades, the field of exoplanetary science has undergone nothing short of a revolution. We have gone from the oddball discovery of a ‘planetary sized object’ orbiting a pulsar star (Wolszczan and Frail, 1992) to efficient and systematic all-sky surveys with nearly two thousand confirmed exoplanets and over three thousand candidates awaiting confirmation (Burke et al., 2013). With such wealth of systems discovered, we are constantly edging closer to finding the holy grail of planetary science: an Earth analogue with habitable conditions. To understand conditions of habitability, we must characterise the exoplanets. This is best achieved by the spectroscopy of their atmospheres in the near to mid-IR wavelength ranges (5-20 microns) where complex molecules emit. Whilst JWST/MIRI does cover these wavelength ranges in four separate filters, the importance of one-shot, simultaneous wavelength coverage to constrain stellar and planetary variability cannot be overstated.

In this talk we will present the concept of a high-stability spectrograph on the proposed SPICA mission, featuring a continuous wavelength coverage from the near to mid-IR, ideally placed to characterise warm-Neptunes to habitable zone planets.