

In the last decade, ground-based high-resolution spectroscopy (HRS) has emerged as a powerful method to characterise exoplanet atmospheres. With tens of instruments worldwide, HRS has produced detections on many targets, revealing these planet's thermal, compositional and dynamical structure. As HRS science continues to mature, novel strategies will be key to fully and robustly extracting the 3-dimensional information encoded in these rich datasets. Eclipses, where the planet is progressively hidden/revealed from behind its star, could provide a unique solution for obtaining spatially resolved dayside spectra. While it has been successfully applied at low spectral resolutions to map temperatures on several HJs, eclipse mapping has yet to be attempted with HRS.

We present results from the first observational campaign to perform high resolution eclipse mapping on the ultra-hot Jupiter (UHJ) WASP-33b. With 8 eclipses observed using SPIRou, we are detecting the planet's CO emission as it is being occulted for the first time. While our signal is not yet strong enough to recover meaningful spatial information, it highlights both the potential of stacking multiple eclipses, as well as challenges for data processing with short time-series. Based on the SPIRou data and initial results from an ongoing study with IGRINS-2 observations, we present future prospects for eclipse mapping at high-resolution with the ELT.