

P315a **The day-side atmosphere of WASP-33b seen through the InfraRed Doppler instrument**

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In this talk, I will present our latest result in characterising the day-side atmosphere of an ultra-hot Jupiter, WASP-33b, using the data obtained by the InfraRed Doppler instrument on the Subaru telescope last year. Using high-resolution cross-correlation spectroscopy, we confirmed our previous detection of OH emission but only after the secondary eclipse. Through an injection test, we show that we should be able to also detect the same signal before the eclipse. More importantly, we were able to detect the emission of Fe and Si both before and after the secondary eclipse and Ti only after the secondary eclipse. This indicates that the spatial distribution of each chemical species is different and that we are probing the different parts of this 3D atmosphere. Additionally, we also found evidence of the emission of Mg and Mn after combining all data sets, which along with Ti, if confirmed, add more chemical species that are detected on the day-side of an exoplanet.