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Stangret, M.B.; Palle Bago, E.; Orell-Miquel, J.; Esparza-Borges, E.; Casasayas Barris, N.

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High-resolution transmission spectroscopic studies of hot and ultra-hot Jupiters.

Monika B. Stangret[1] Enric Palle Bago[2] Jaume Orell-Miquel[2] Emma Esparza-Borges[2] Núria Casasayas-Barris[3]

[1]Instituto de Astrofisica de Canarias, [2]Instituto de Astrofísica de Canarias, [3]Leiden Observatory

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Hot and ultra-hot Jupiters, gas-giant planets with short orbital period, and hot, extended atmospheres, are most suitable objects in order to study the chemical composition of the atmospheres using emission and transmission spectroscopy. Their tidally-locked nature leads to big differences between night and day side temperatures, and in consequence differences in the atmospheric chemical composition on both terminators. Thanks to new generation of high-resolution ground based spectrographs such us HARPS-N, HARPS, CARMENES, and ESPRESSO, we are able to perform those studies.

During our talk we want to present a complex analysis of the chemical composition of a set of hot and ultra-hot Jupiters using high-resolution spectroscopic observations. Using cross-correlation method and transmission spectroscopy around single lines, we searched for a set of atoms and molecules in their atmospheres. Additionally, by analysing the Rossiter-McLaughlin effect we measured the obliquity of those systems.

Our work determines the temperature in which we differentiate between hot and ultra-hot Jupiters, and show the importance of complex studies of those object using broad set of chemical species models.