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Titulo: Simulations of transit spectra of Hot Jupiters in the infrared branch of CARMENES (1-1.7 µm)

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Resumen:

Transmission spectroscopy in the primary transit of an exoplanet has proven to be very useful for obtaining information of exoplanet atmospheres from both ground-based facilities and space telescopes. On the other hand, The Calar Alto high-Resolution search for M dwarfs with Exoearths with Near-infrared and optical Échelle Spectrographs (CARMENES) instrument has started being operative very recently. In this work, we explore the capabilities of CARMENES for extracting information of Hot Jupiter atmospheres taking advantage of its ultra-stability, its wide spectral interval (0.55-1.7 µm), and high spectral resolution (R=82000). In particular, the latter allow us to separate the Earth\'s telluric components from the exoplanet\'s atmospheric signature. Here we present simulations of primary transit transmission spectra of Hot Jupiters in the 1-1.7 µm spectral range where several molecules, such as water vapour, carbon monoxide, carbon dioxide and methane, have strong ro-vibrational bands. Sensitivity studies are presented for the range of expected concentrations of these species, as well as for the current range of temperature profiles. Our simulations have been performed using the line-by-line Karlsruhe Optimized and Precise Radiative Transfer Algorithm (KOPRA) adapted for exo-atmospheres. Some preliminary results will be presented for two Hot Jupiters, HD 189733b and HD 209458b.