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Citation

Esparza Borges, E., Oshagh, M., Casasayas Barris, N., & Pallé, E. (2021). Retrieving the transmission spectrum of HD 209458b using CHOCOLATE: a new Chromatic Doppler Tomography technique. *European Planetary Science Congress*, EPSC2021-856.
doi:10.5194/epsc2021-856

Version: Publisher's Version

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Downloaded from: <https://hdl.handle.net/1887/3275631>

Note: To cite this publication please use the final published version (if applicable).

EPSC Abstracts

Vol. 15, EPSC2021-856, 2021

<https://doi.org/10.5194/epsc2021-856>

Europlanet Science Congress 2021

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Retrieving the transmission spectrum of HD 209458b using CHOCOLATE: a new Chromatic Doppler Tomography technique

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Multi-band photometric transit observations or low resolution spectroscopy (spectro-photometry) are normally used to retrieve the broadband transmission spectra of transiting exoplanets in order to assess the chemical composition of their atmospheres. In this work, we present an alternative approach for recovering the broadband transmission spectra using chromatic Doppler Tomography. To validate the method and examine its performance, we used new observational data obtained with the ESPRESSO instruments to retrieve the transmission spectra of the archetypal hot Jupiter HD209458b. Our findings indicate that the recovered transmission spectrum is in good agreement with the results presented in previous studies, which used different methodologies to extract the spectrum.