



ARES V: No Evidence For Molecular Absorption in the HST WFC3 Spectrum of GJ 1132 b

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We present a study on the spatially scanned spectroscopic observations of the transit of GJ 1132 b, a warm (~500 K) Super-Earth (1.13 Re) that was obtained with the G141 grism (1.125 - 1.650 micron) of the Wide Field Camera 3 (WFC3) onboard the Hubble Space Telescope. We used the publicly available Iraclis pipeline to extract the planetary transmission spectra from the five visits and produce a precise transmission spectrum. We analysed the spectrum using the TauREx3 atmospheric retrieval code with which we show that the measurements do not contain molecular signatures in the investigated wavelength range and are best-fit with a flat-line model. Our results suggest that the planet does not have a clear primordial, hydrogen-dominated atmosphere. Instead, GJ 1132 b could have a cloudy hydrogen-dominated envelope, a very enriched secondary atmosphere, be airless, or have a tenuous atmosphere that has not been detected. Due to the narrow wavelength coverage of WFC3, these scenarios cannot be distinguished yet but the James Webb Space Telescope may be capable of detecting atmospheric features, although several observations may be required to provide useful constraints

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