WIND AND CHEMICAL PATTERNS IN THE HOT JUPITERS TOI-1518B

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I. OBSERVATIONS & METHODS

- 2 observations of TOI-1518b a misaligned planet (Fig.1) with Maroon-X, a high-resolution spectrograph (R = 85000) in the optical
- Removing stellar and telluric signal with out of transit data + Principal Component Analysis
- Cross Correlate residuals with synthetic spectra obtain with petitRADTRANS and FastChem

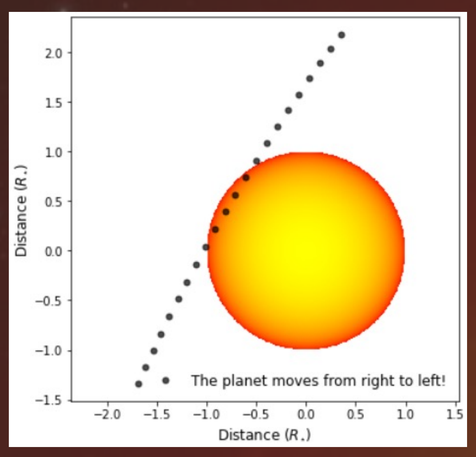

Fig1. Representation of TOI-1518b transit

II. DETECTION WITH CROSS CORRELATION

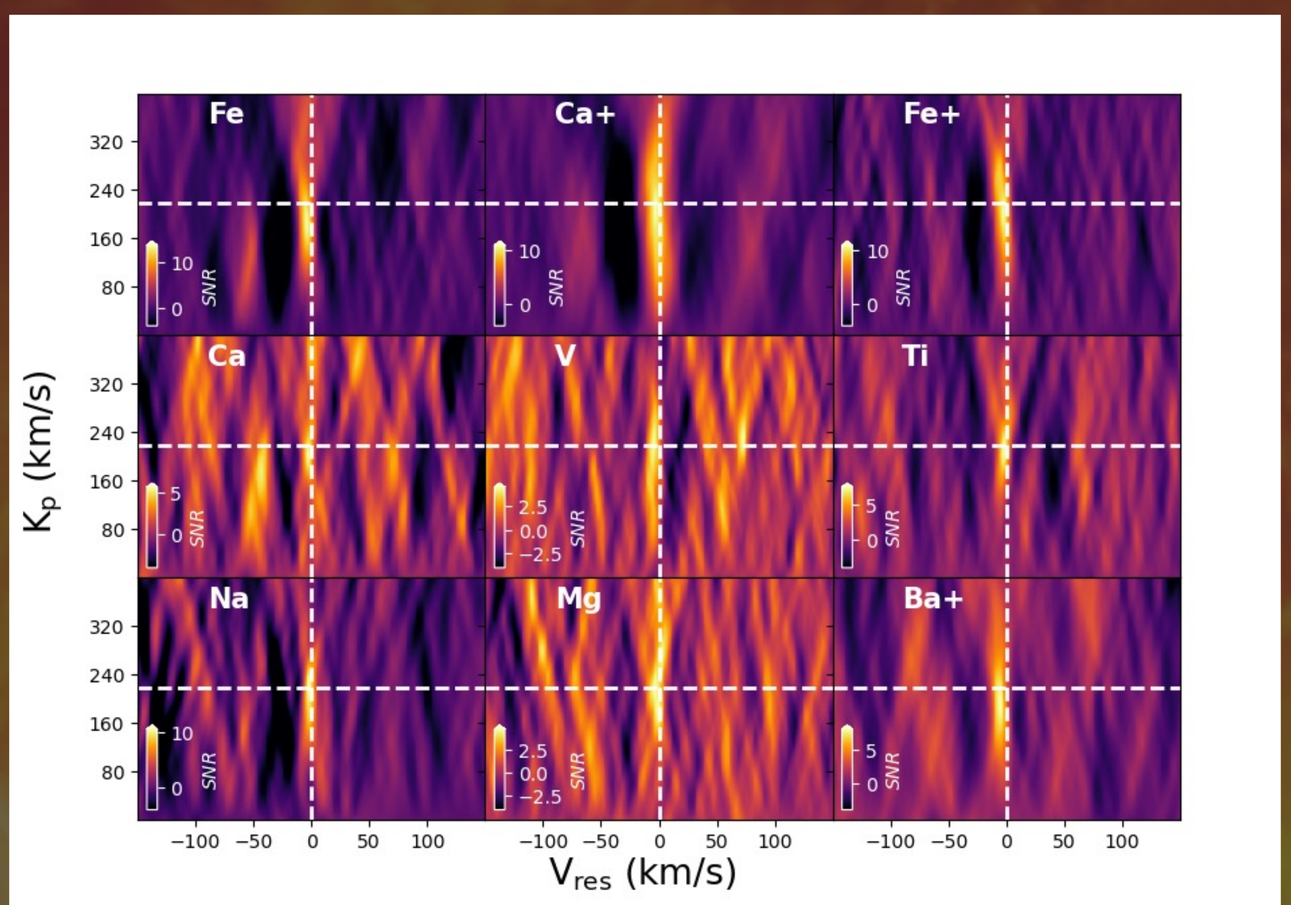

Fig 2. Kp-Vres diagram of all the detected species in TOI-1518b both transits.

DETECTION OF 9 SPECIES WITH MORE THAN 4.5 SIGMA

III. IRON TRAIL WITH CCF

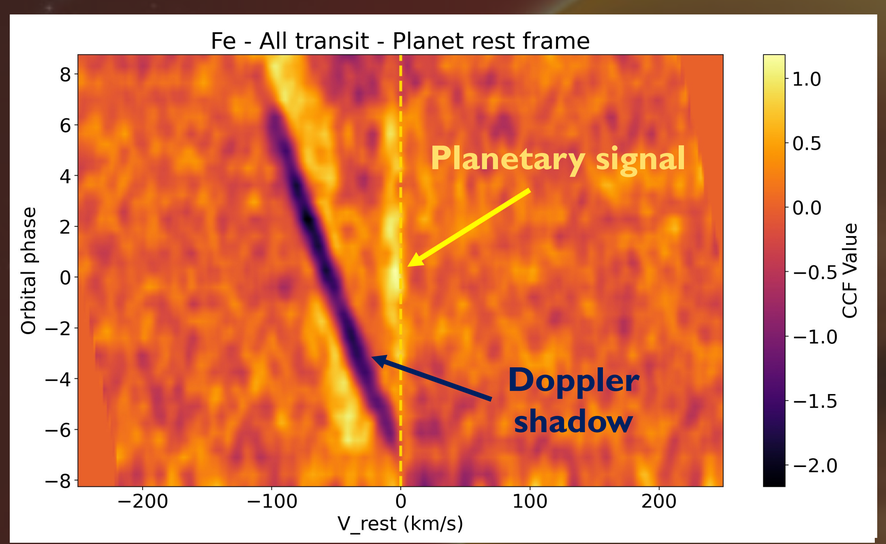

Fig 3. Trail of the Iron CCF signal over the phase angle of the transit in function of the radial velocity in the planetary rest frame

BLUESHIFT OF THE IRON TRAIL DURING THE TRANSIT

IV. COMPARING IRON TRAIL WITH GCMs MODELS

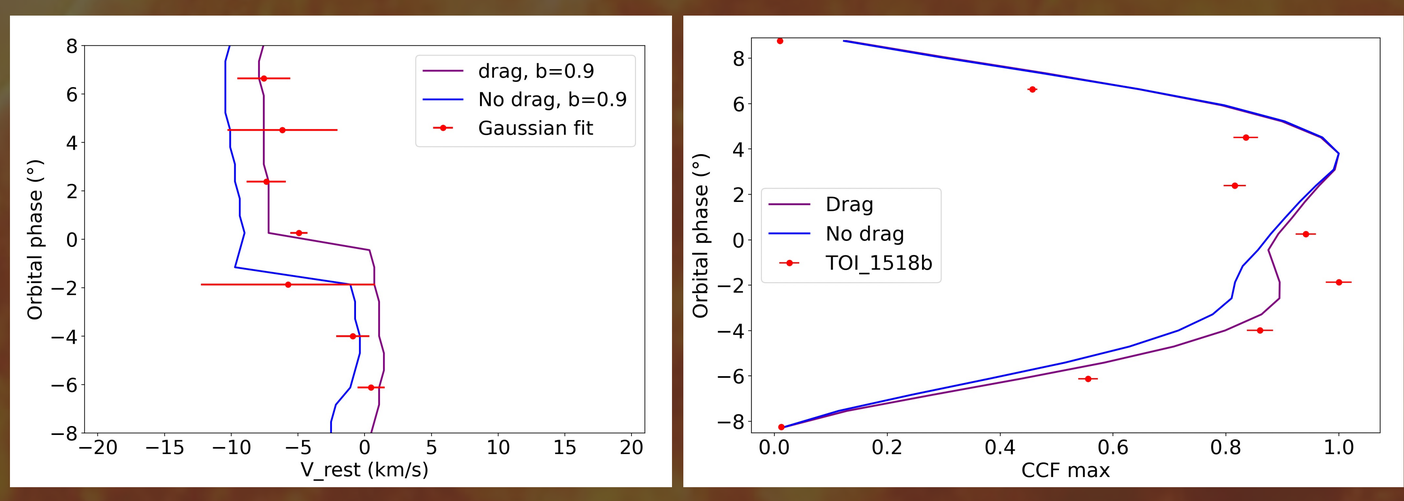

Fig 4. Comparison of the position (left pannel) and strength (right pannel) of Gaussian fit of the 1D CCF of the data (fig3) and GCMs models from J.Wardenier cross correlated with same synthetic spectra

DATA SEEMS TO MATCH BETTER WITH THE GCM MODEL INCLUDING STRONG DRAG EFFECT

V. RETRIEVAL ANALYSIS

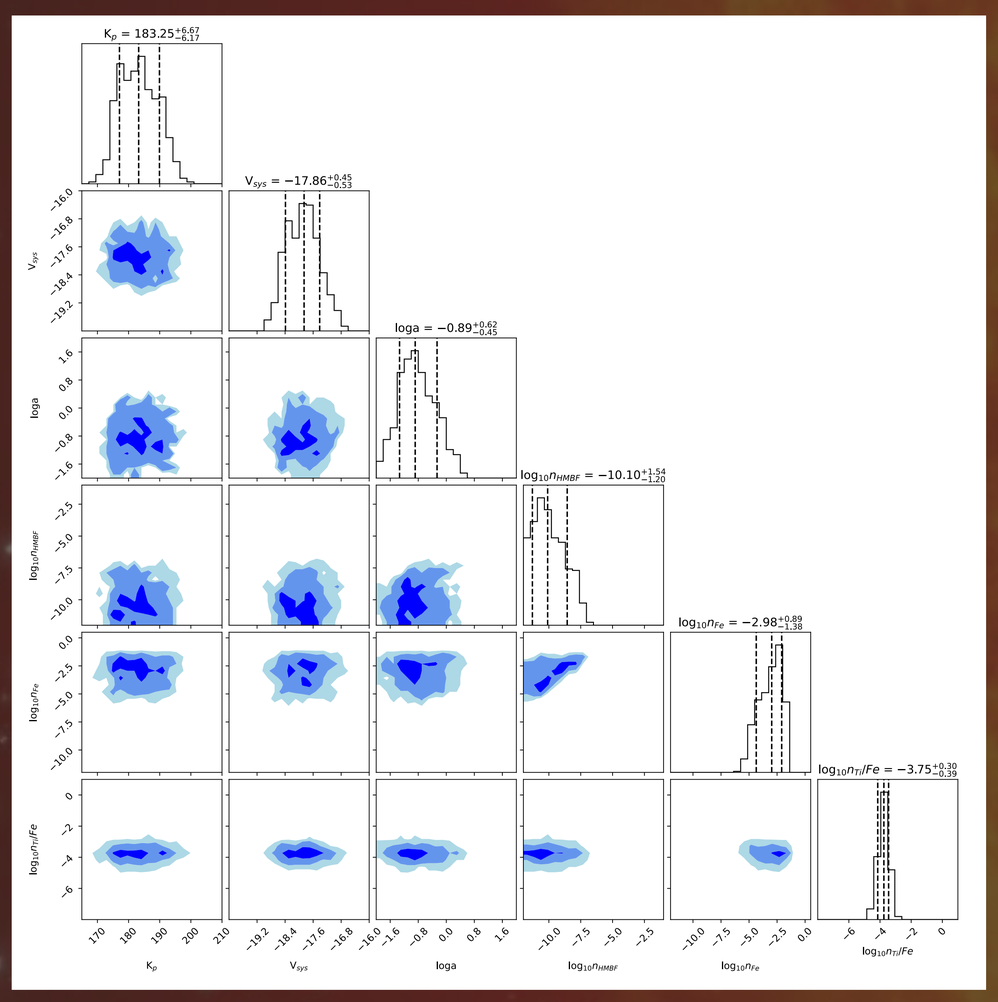

Fig 5. Retrieval analysis perform with CHIMERA code from M.Line.

RETRIEVED TI/FE = NX SOLAR VALUE

VI. DISCUSSION

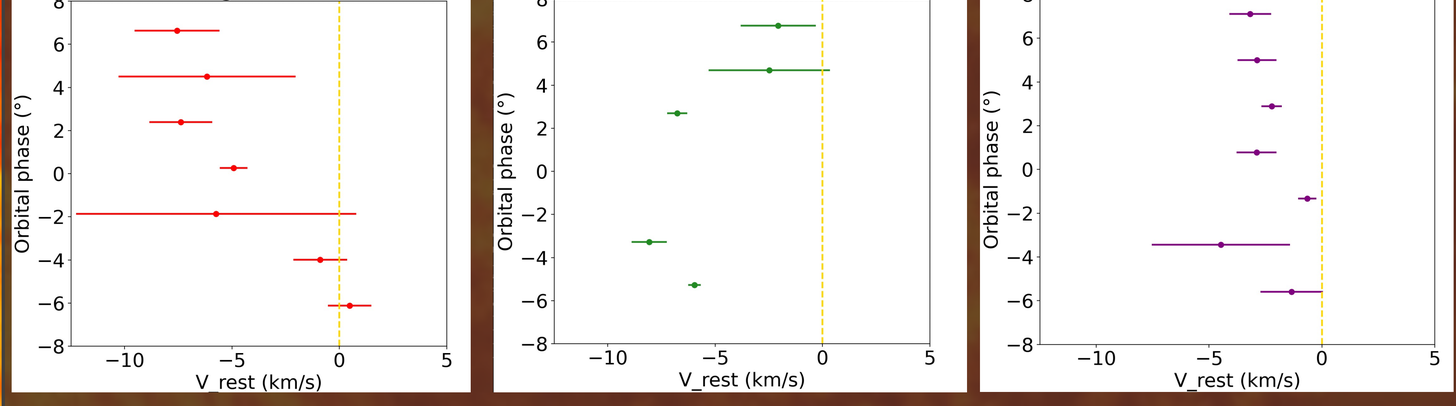

FIG.6. Comparison of Gaussian fit from 1D CCF of different target from Exowind program (Pi : Parmentier)

GLOBAL BLUESHIFT PRESENT IN THE THREE TARGET AS IN WASP 76B

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