

ESO observing programme 0111.C-0166(A)

Abstract

This Phase 3 release consists of the flux-calibrated, stacked 1D spectrum of the isolated, free-floating accreting protoplanet 2MASS J11151597+1937266 (2M1115), obtained from its high-resolution (~50,000) observations by the Ultraviolet and Visual Echelle Spectrograph (UVES) at ESO/VLT between 10–11 June 2023 as part of the ESO programme 0111.C-0166(A). This is the underlying data used for the analysis in Viswanath et al. (2024, <https://doi.org/10.1051/0004-6361/202450881>). The spectrum is extracted for each arm of UVES (Blue, RedU/L) separately and weighted-averaged over the 4 individual exposures (740 s each) obtained across the two nights of observation.

Overview of Observations

The UVES observations were carried out between 10–11 June 2023 (MJD 60105, 60106) as part of the ExoPlaNeT accretion monitoring spectroscopic survey (ENTROPY) in #Dichroic 1 mode with both the blue (390 nm) and red (580 nm) arms using a 0.8" wide slit without AO or chopping.

A total of four frames at 740 s exposure (NDIT=1) each were obtained across the two nights, giving a total integration time of 0.82 hr at an average seeing of 1.43" and an average airmass 1.416. The total wavelength range covered by the spectrum is 320–680 nm.

Release Content

Target name: 2MASS J11151597+1937266

ICRA RA (ep=J2000): 11 15 15.9748786344

ICRA DEC (ep=J2000): +19 37 26.582657556

Distance: 45.2 ± 2.2 pc

Mass: $6_{-4}^{+8} M_{Jup}$

T_{eff} : 1816 ± 63 K

Spectral Range: 328.6 – 451.87 nm (Blue), 476.81 – 574.92 nm (RedL), 582.29 – 675.94 nm (RedU)

Resolution: ~50,000

Release Notes

Each of the 4 raw data frames from the original set of exposures from the 2 nights were bias subtracted and flat-field corrected using the calibration files from ESO. Inter-order background was also subtracted. Cosmic rays were accounted for by using a horizontal median filtering and masking out pixels higher than 10 times the local variance. The flux was extracted order by order using standard aperture photometry, which included the subtraction of sky background and telluric lines. The flux was calibrated based on the observations of a standard star taken contemporaneously with the same observing setup as the target, and was corrected for the relative slit loss (~4%) from seeing. Wavelength calibration was performed using the arc lamp spectrum and a Th–Ar line list. The wavelengths listed in the spectrum are in air. A barycentric velocity correction was applied to the wavelength calibration to transform the spectral reference system to that of the source. The stacked 1D spectrum available in this data release is obtained by taking the weighted average of the 4 individual spectra, with the weights determined from the respective photon noise.

Data Format

Files Types

For each UVES arm ('Blue', 'RedL', 'RedU'), the data release contains

- a. 1 Science Data Product (SDP) named *SDP-UVES-2023.06.10-11.2M1115.<arm>.1DSpec.fits*. The fits file has a single binary table extension that contains the calibrated 1D spectrum of that arm stacked over the 4 individual exposures. The flux for the overlapping wavelengths in adjacent orders were averaged to get a single flux value per wavelength. Note that some of the emission lines like H β occur in both adjacent orders but at different signal strengths; merging the orders by averaging the flux will suppress the strength of such emission lines.
- b. 4 Ancillary science products (ADPs) with the naming convention *ADP-UVES.<obs-time>2M1115.<arm>.Reduced.2DSpec.fits* that contain the 2D science frames from each exposure after basic reduction, inter-order background removal and correction for cosmic rays.

Acknowledgements

According to the Data Access Policy for ESO data held in the ESO Science Archive Facility, all users are required to acknowledge the source of the data with appropriate citation in their publications.

Please cite the following publication if you make use of this data for your research:

Viswanath et al. (2024), A&A, <https://doi.org/10.1051/0004-6361/202450881>

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