Rocky Worlds DDT: HST Data Analysis Report for TOI-244, Visit 7

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HST observed Visit 7 of the program for TOI-244 (PID 18258) on August 17, 2026. This visit was designed with a single STIS exposure using the grating G230L; the final goal is to measure the full spectral energy distribution of the host star by combining the new data with existing archival data. These observations are fundamental to constraining the high-energy output of this host M dwarf in the UV, which can be applied to planetary models of atmospheric escape, as well as photochemistry if a planetary atmosphere is present.

More details about the observing modes, technical justifications and decisions are available in the RWDDT Scheduling Report for TOI-244 (Debes et al., 2026)[1]. The observing log of the visits discussed in this report is shown in Table 1.

Table 1: Observations log of this data analysis report.

Visit	Dataset	Mode	Start Date & Time	Exposure time (s)	Status
7	OFT907010	STIS/G230L	2026-08-17 12:42:09	2065.200	Pass

1 Data quality

We did not receive any AlertObs notifications for Visit 7. We do not observe any significant effects of jitter pointing trends in the observations. We present the time series of jitter vectors in Figure 3.

2 Data Reduction

2.1 Spectral analysis

The host star TOI-244 is bright enough in the NUV/G230L to be extracted automatically by CalSTIS without any issues.

2.2 Time-series analysis

All UV observations of TOI-244 in the RWDDT program were executed in photon-counting mode, or TIME-TAG. The Rocky Worlds Utils codebase possesses a dedicated time-series analysis tool that enables the user to create flux-calibrated light curves integrated over user-defined wavelength ranges at any temporal resolution within the precision of the STIS and COS instruments. For the RWDDT program, we produced light curves with a temporal resolution of 5 s for all TIME-TAG observations. For every non-Lyα observation, we integrate fluxes in the entire wavelength available and

[1] Available on the Rocky Worlds DDT website.

mask out ranges with geocoronal contamination. We do not perform corrections for telescope breathing or other systematic effects.

3 Combined science products

3.1 Light curves

We present the resulting light curve of the HST STIS/G230L observation of TOI-244 in Figure 1. We do not detect any flares in Visit 7.

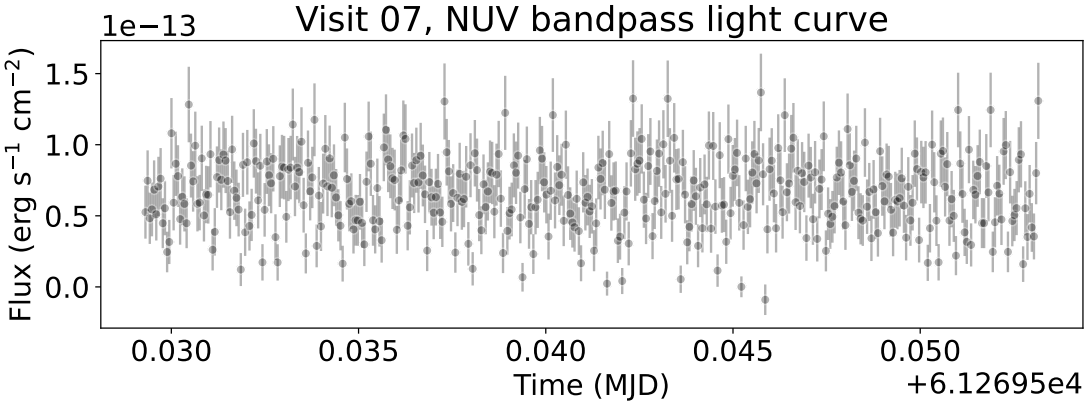

Figure 1: Light curve of Visit 7. The NUV continuum corresponds to wavelengths [1700, 3150] Å.

3.2 Spectrum of TOI-244

We utilized the HSLA codebase (Sankrit et al., 2025) to produce a high-fidelity spectral energy distribution (SED) of TOI-244, which we present in Figure 2. At this stage, we have not yet co-added the existing archival data of TOI-244.

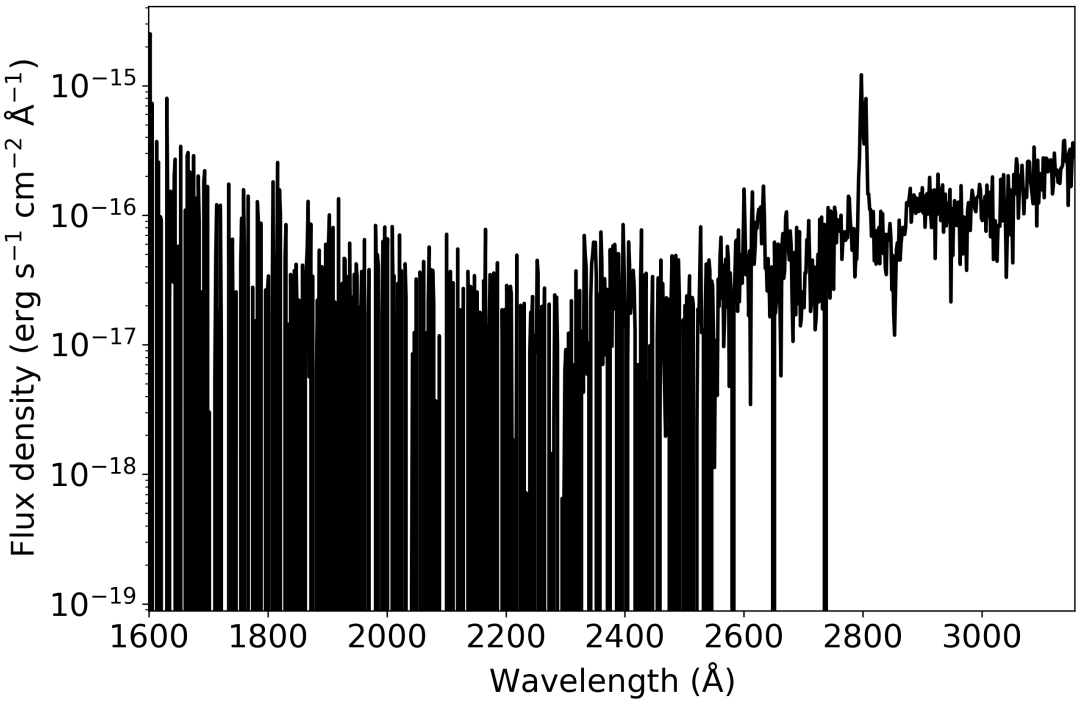

Figure 2: Full spectral energy distribution of TOI-244 as observed in this visit.

Appendix

We present below the HST pointing jitter vectors of the visit in this report. We do not observe any significant trends that could potentially affect the quality of the observations.

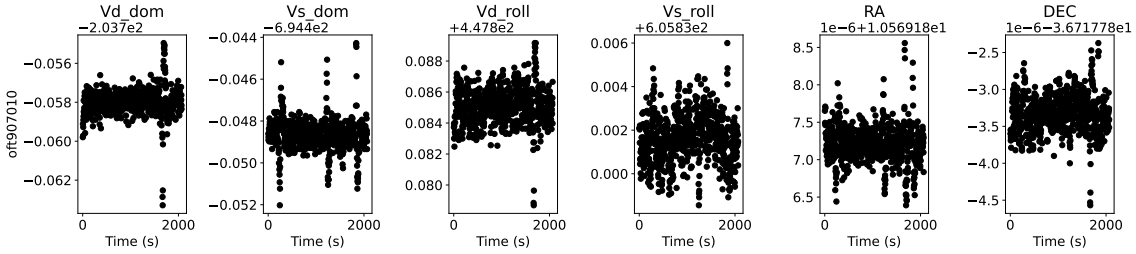

Figure 3: Jitter vectors for the G230L exposure in Visit 7.

References

Debes, J., Dos Santos, L., Espinoza, N., & Diamond-Lowe, H. 2026, Rocky Worlds DDT: HST Scheduling Report for TOI-244, RWDDT Scheduling Reports

Sankrit, R., Debes, J., Burger, M., et al. 2025, Overview of the new Hubble Spectroscopic Legacy Archive, Instrument Science Report COS 2025-18, 35 pages