

# A STUDY OF TCP J2104, A HIGHLY EVOLVED CATAclySMIC VARIABLE

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## **Abstract**

Despite its proximity ( $109.2 \pm 1.5$  pc), the cataclysmic variable TCP J21040470+463112 remained unnoticed until the system went into outburst in 2019. Here we make the first direct study of the white dwarf primary of the highly evolved CV, by analysing far-ultraviolet COS observations obtained with HST. Using the spectrophotometric capabilities of the COS instrument, we integrated the flux of the spectra finding a highly variable lightcurve. We also performed a cross correlation analysis to measure the radial velocity variation of the white dwarf, which we found to be modulated on a period of  $\simeq 77$  min, consistent with the orbital period found in previous studies. Phase-folding by this period, an orbital fit was made to find the radial velocity of the white dwarf, resulting in a very low radial velocity amplitude – suggestive of a very low-mass donor. Furthermore, the spectra also show two Nitrogen emission lines, whose low velocity, obtained by Gaussian fitting, hints at their origin arising either from the atmosphere of the white dwarf or a close region around it. Finally, we determine the white dwarf effective temperature, surface gravity, and photospheric abundances from the COS spectroscopy. We discuss in detail our results and their physical implications.