Accretion in the detached post-common-envelope binary LTT 560

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In a previous study, we found that the detached post-common-envelope binary LTT 560 displays an Halpha emission line consisting of two anti-phased components. While one of them was clearly caused by stellar activity from the secondary late-type main-sequence star, our analysis indicated that the white dwarf primary star is potentially the origin of the second component. However, the low resolution of the data means that our interpretation remains ambiguous. We here use time-series UVES data to compare the radial velocities of the Halpha emission components to those of metal absorption lines from the primary and secondary stars. We find that the weaker component most certainly originates in the white dwarf and is probably caused by accretion. An abundance analysis of the white dwarf spectrum yields accretion rates that are consistent with mass loss from the secondary due to a stellar wind. The second and stronger Halpha component is attributed to stellar activity on the secondary star. An active secondary is likely to be present because of the occurrence of a flare in our time-resolved spectroscopy. Furthermore, Roche tomography indicates that a significant area of the secondary star on its leading side and close to the first Lagrange point is covered by star spots. Finally, we derive the parameters for the system and place it in an evolutionary context. We find that the white dwarf is a very slow rotator, suggesting that it has had an angular-momentum evolution similar to that of field white dwarfs. We predict that LTT 560 will begin mass transfer via Roche-lobe overflow in about 3.5 Gyrs, and conclude that the system is representative of the progenitors of the current population of cataclysmic variables. It will most likely evolve to become an SU UMa type dwarf nova.

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