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The accretion process in the magnetic Herbig Ae star HD 104237

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Abstract. After successfully retrieving the known rotation period $P = 42.076$ d in the Herbig Ae star HD 101412 using spectroscopic signatures of accretion tracers (Schöller *et al.* 2016), we have studied magnetospheric accretion in the Herbig Ae SB2 system HD 104237 using spectroscopic parameters of the He I 10830, Paγ, and He I 5876 lines, formed in the accretion region. Employing 21 spectra obtained with ISAAC and X-shooter, we found that the temporal behavior of these parameters can be explained by a variable amount of matter being accreted in the region between the star and the observer. Using a periodogram analysis, we examined the possible origin of the accretion flow in HD 104237 and considered the following four scenarios: matter flows from the circumbinary envelope, mass exchange between the system's components, magnetospheric accretion (MA) from the disk onto the star, and fast high-latitude accretion from a disk wind onto a weakly magnetized star. Based on a correlation analysis, we were able to show that the primary component is responsible for the observed emission line spectrum of the system. Since we do not find any correlation of the spectroscopic parameters with the phase of the orbital period ($P \approx 20$ d), we can reject the first two scenarios. We found a variation period of about 5 d, which likely represents the stellar rotation period of the primary and favors the MA scenario.

Reference

Schöller, M., *et al.*, 2016, *A&A*, 592, A50