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V4142 Sgr a Double Periodic Variable with an accretor surrounded by the accretion-disk's atmosphere

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We present a a detailed study of the Double Periodic Variable V4142 Sgr based on photometric and spectroscopic analysis. We re-analized and improved an orbital period of 30.633 ± 0.002 days and a long cycle of 1201 ± 14 days. Our spectral analysis reveals H α absorption with a persistent $V \leq R$ asymmetry emission which is considered evidence of a possible wind in the hotspot region. In addition, we find an cold and evolved donor star of $M_{\rm d} = 1.11 \pm 0.2$ M $_{\odot}$, $T_{\rm d} = 4500 \pm 125$ K and a $R_{\rm d} = 19.4 \pm 0.2$ M $_{\odot}$ and a rejuvenated B-dwarf companion of $M_{\rm g} = 3.86 \pm 0.3$ M $_{\odot}$, $T_{\rm g} = 14380 \pm 700$ K and $R_{\rm g} = 6.35 \pm 0.2$ R $_{\odot}$. The gainer is surrounded by concave and geometrically thick disk creating its own atmosphere around of main component of a radial extension $R_{\rm d} = 22.8 \pm 0.3$ R $_{\odot}$, contributing ~ xx percent of the total luminosity of the system at the V-band. The disk is characterized by a hot-spot roughly placed where the stream hits the disk and an additional bright-spot separated $102^\circ.5 \pm 0^\circ.04$ degree apart along the disk edge rim in the direction of the orbital motion. The system is seen under inclination $81^\circ.5 \pm 0^\circ.3$ and to a distance $d = xx \pm xx$ pc. Doppler maps of the emission lines reveals sites of enhanced line emission in the 2th and 3th velocity quadrants, the first one corresponds to the hot-spot ad the second to the bright spot detected by the light curve analysis. In addition, the Balner line emission shown a disk with horseshoe-shaped.

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