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Spectral and photometric studies of polar CRTS CSS 130604 J 215427+155714

Borisov N., Gabdeev M., Shimansky V., Katysheva N., Shugarov S.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2017, Pleiades Publishing, Ltd. We present the results of spectroscopic and photometric studies of a new polar CRTS CSS 130604 J 215427+155714, conducted at the telescopes of the SAO RAS. Analysis of the photometric series of observations allowed to clarify the orbital period of the system, $P_o = 0.d\ 0672879 (\pm 0.0000003)$. We build radial velocity curves and trace the intensity variations in the H β and H γ hydrogen lines and He II $\lambda\ 4686\ \text{\AA}$ ionized helium line. Based on the H β and He II lines we build Doppler maps. It is shown that the line formation region is localized near the Lagrange point. The following parameter estimates of the system are obtained: $M_1 = 0.83 \pm 0.10 M_\odot$, $M_2 = 0.15 \pm 0.01 M_\odot$, $q = M_2/M_1 = 0.18 \pm 0.03$, $i = 53^\circ \pm 5^\circ$. Based on the results of spectral, photometric and previously published polarimetric observations the possible geometric model of the system is discussed.

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Keywords

CRTS CSS 130604 J 215427+155714—methods, individual, novae, cataclysmic variables—stars, polarization

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