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ABSTRACT

The analysis of the eclipses in the system DQ Her based on the photometric observations of different authors during 1954, 1956 and 1975 allows us to obtain the photometric elements of the system and the structure of disk-like envelope surrounding the white dwarf. The orbit inclination of the system is $i = 80^\circ \pm 3^\circ$, the major axis of the secondary component is 0.40 ± 0.03 , the orbit radius is $(10 \pm 2)10^{10}$ cm, the masses of the components are: $m_{wd} = (0.65 \pm 0.35)M_\odot$, $m_2 = (0.50 \pm 0.15)M_\odot$. A decrease in the optical luminosity of $\sim 20\%$ and a total decrease in size of the disk-like envelope of $\sim 10\%$ is observed from 1954 to 1975. The brightness of the disk-like envelope increases towards its center. The radiation temperature increases toward the center according to the laws $T \sim r^{-0.20}$ and $T \sim r^{-0.35}$ for 1954 and 1975, respectively. The average value of the radiation temperature of the disk-like envelope is about 10^4 K. The bolometric luminosity of the envelope is $(1 \text{ to } 2)L_\odot$. The bolometric luminosity of the central white dwarf is anomalously high: $\sim (20 \text{ to } 200)L_\odot$ and the effective temperature of its surface is $\sim (1.0 \text{ to } 1.7)10^5$ K. All these results indicate that the disk-like envelope in the system DQ Her is an accreting disk.