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HQ AND HV ANDROMEDAE : FURTHER PHOTOMETRIC STUDY OF POLAR CANDIDATES

The variability of these stars was discovered by Meinunger (1975) and they were classified as rapid irregular variables. Later on, Meinunger (1980) pointed out that the spectrograms of the stars show the presence of weak emission lines of Hα and Hβ and therefore he classified them as cataclysmic variables possibly belonging to polars. However, no other spectroscopic or polarimetric observations were made since that time. Here we discuss the results of the photometric investigation of stars on astrograph plates of Sonneberg Observatory. The brightness of Meinunger's (1975) comparison stars was used.

HQ And (=S 10774). After 800^d- rise of brightness at the beginning of our observations, the luminosity changes become larger (in amplitude). However, this effect might be partially explained by the decrease of the exposure time. It seems to be real as some specially obtained plates show rapid variability with the characteristic time of about one-two hours. Unfortunately, these data are insufficient to discuss the possible orbital period.

The brightness difference between "active" and "inactive" states is smaller, as compared to 3 magn. in AM Herculis (Hudec and Meinunger 1976), and one may show only one sure "inactive" state near JD 2440800, and two possible ones near 2441900 and 2446100. The upper limit for the duration of the last mentioned minimum is about 600^d, but between the two first ones is about 1100^d.

HV And (=S 10777) has much more prominent "eclipse-like" "excursions" to "inactive state", which are more similar to that of MV Lyrae before switching off of the accretion in the system (Andronov and Shugarov 1982, Wenzel and Fuhrmann 1983), than to polars. However, the long-period polar QQ Vulpeculae underwent such "excursions", during which the brightness decreases by ∿2.5 magn., but in this system their duration is of about two weaks (Andronov et al., 1987), that is much shorter, than in HV Andromedae (upper limit 300^d).

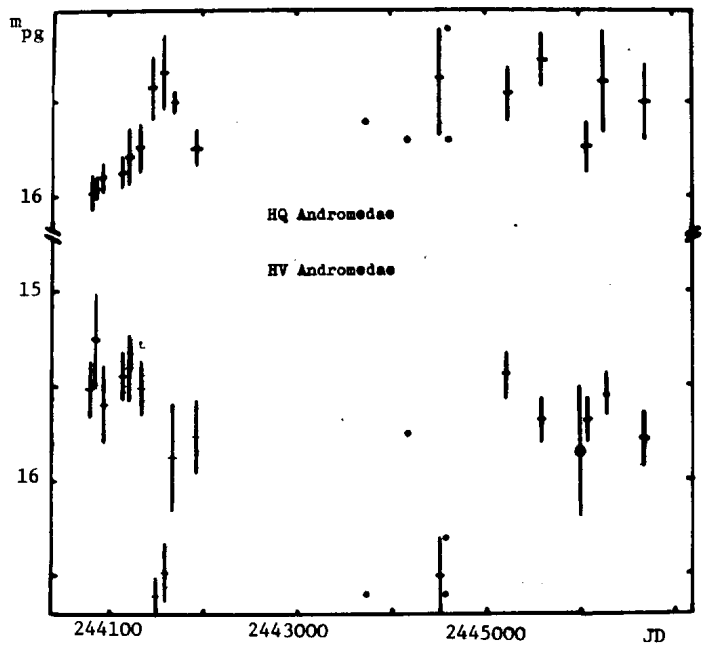

Figure 1

Andronov and Banny (1985) argued for 80.6-min photometric period of the star derived from four nights of observations. However this value might be corected by future observations, our present data are not sufficient to study the orbital variability.

The present data are in agreement with the classification of Meinunger (1980), who supposed these stars were candidates for polars. But naturally, the classification of these stars is not fully confirmed, so the theoretical models for luminosity changes in polars (eg. Andronov 1986 and refs therein) might not yet be applied to these two stars.

The light curves have very large gaps, and it would be important to fill them by using other plate collections, especially at Harvard and Bamberg. Only complex investigations may enable us to understand these interesting objects.

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