

AM HERCULIS IN A LOW STATE OF BRIGHTNESS (SEPTEMBER, 1991)

J. M. Bonnet-Bidaud¹, M. Mouchet², T. A. Somova³, N. N. Somov³

¹ Service d'Astrophysique, DAPNIA/SAp, F-91191, Gif sur Yvette Cedex France

² Meudon Observatory, 92290 Meudon, France

³ Special Astrophysical Observatory, Nizhnij Arkhyz, 357147, Russia

ABSTRACT. The results of spectral and photometric observations of the polar AM Her at the 6-m telescope of the Special Astrophysical Observatory (RAS) on 4/5 and 5/6 September 1991 are presented. The spectra were obtained with a TV scanner (Drabek et al. 1986) mounted on the spectrograph SP-124 at the secondary focus (N1) in the wavelength range (3950 – 4950 Å) with the spectral resolution 2Å. Photometric UBVR measurements and light curves in the filter B with a temporal resolution of 0.1 s, using NEF photometer (Vikulev et al. 1991), were also performed. AM Her was observed in filter V on September 4th at a magnitude of 15.757(±0.006) and on September 5th at 15.152(±0.003), that is in a low state of brightness. On September 4th, the weak emission lines of hydrogen and absorption Zeeman components were seen in the spectra. The spectra show strong changes after one day. On September 5th, the lines of higher excitation He II 4686, He I appeared. The equivalent widths of the hydrogen lines increased by a factor 3 and their relative intensities by a factor 1.5, while the Zeeman absorption lines decreased by a factor 2–3. Using the absorption spectrum of Zeeman hydrogen splitting, a magnetic field of (≈ 10 MGs) is estimated.

Quasi-periodic oscillations with a period of 397 sec and an amplitude of 6–8% during 30 min were registered in the light curve of Sep-

tember 5th. The spectral and photometric behaviour of AM Her show that it was in the transition from low to intermediate state of brightness. These new observations confirm that (5–7 min) oscillations are characteristic of the AM Her brightness transition as suggested in previous work (Bonnet-Bidaud, Somov, Somova 1992; Somova & Somov 1992; Bonnet-Bidaud, Somova, Somov 1991; Somova, Somov, Bonnet-Bidaud 1992).

Key words: Stars: Cataclysmic

References

- Bonnet-Bidaud J.M., Somov N.N., Somova T.A.: 1992, in: "Stellar magnetism", S.Peterburg, 181.
- Bonnet-Bidaud J.M., Somova T.A., Somov N.N.: 1991, *As.Ap.*, **251**, L27.
- Drabek S.V., Kopylov I.M., Somov N.N., Somova T.A.: 1986, *Astrofiz. Issled. (Izv. SAO)*, **22**, 64.
- Somova T.A., Somov N.N.: 1992, *Soobshch. Spets. Astrofiz. Obs.*, **69**, 21.
- Somova T.A., Somov N.N., Bonnet-Bidaud J.M.: 1992, *Soobshch. Spets. Astrofiz. Obs.*, **69**, 61.
- Vikulev N.A., Zinkovskij V.V., Levitan B.I., Nazarenko A.F., Neizvestny S.: 1991, *Astrofiz. Issled. (Izv. SAO)*, **33**, 158.