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**RAPID SPECTRAL VARIATIONS OF  
THE Be STAR  $\gamma$  Cas**

Spectroscopic observations of the Be star  $\gamma$  Cas were carried out on November 5 and 6, 1992. The purpose was to study the relations between the Be phenomena in the gaseous circumstellar disk and the activity of the central star. The spectroscopic observations were made with the French ISIS spectograph fibre-fed from the 2.16m telescope at Xinglong station of Beijing Observatory (Felenbok and Guerin, 1988). The detector is a Thomson red sensitive CCD with  $576 \times 384$  pixels. By using a  $600 \text{ grooves mm}^{-1}$  grating in second order we get a reciprocal dispersion of  $2.7 \text{ \AA mm}^{-1}$  in the  $H\alpha$  region. Total of 13 profiles were obtained. The data were reduced using the MIDAS image processing software on a Sun 4 station computer of Beijing observatory. The spectral scans for the  $H\alpha$  and HeI 6678 region of  $\gamma$  Cas are shown in Figures 1 and 2, respectively. The  $H\alpha$  emission displayed a triangular profile skewed to the red. From Tables 1 and 2 we see that the  $H\alpha$  emission seems to show rapid fluctuations in equivalent width on a timescales of about 45 minutes, and the spectral scans of the HeI 6678 region have lower signal-to-noise ratio due to greater zenith distance and shorter exposure time. Nevertheless, rapid variations of HeI 6678 in equivalent width can also be seen. In addition, from Figure 3 it is clear that there is a systematic trend of red shift in the  $H\alpha$  profiles.

We suggest that the rapid variations of the HeI 6678 may be attributed primarily to photospheric activity, while the changes in  $H\alpha$  may indicate that some material in the envelope was falling back onto the central star at the time of our observations.

Table 1. The results of the measurement of  $H\alpha$  for  $\gamma$  Cas

No.	observing date	exposure time (min.)	Equivalent width ( $\text{\AA}$ )	V/R
1	5 Nov. 1992	20	-17.280	1.121
2	5 Nov. 1992	15	-17.502	1.167
3	5 Nov. 1992	20	-17.621	1.164
4	6 Nov. 1992	20	-17.810	1.139
5	6 Nov. 1992	20	-16.710	1.157
6	6 Nov. 1992	25	-16.614	1.176
7	6 Nov. 1992	25	-17.104	1.152

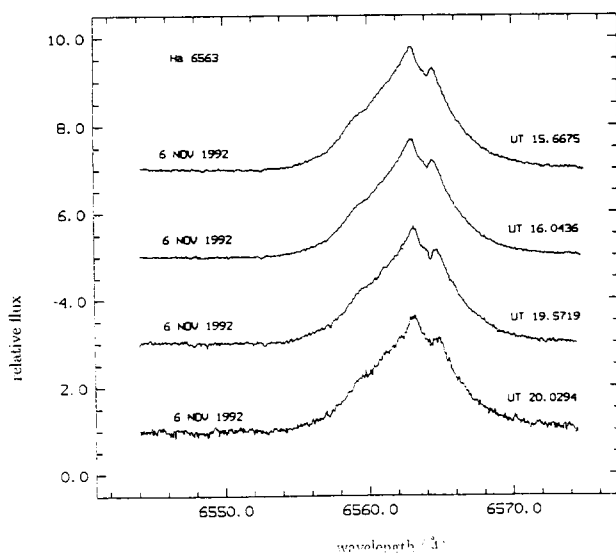
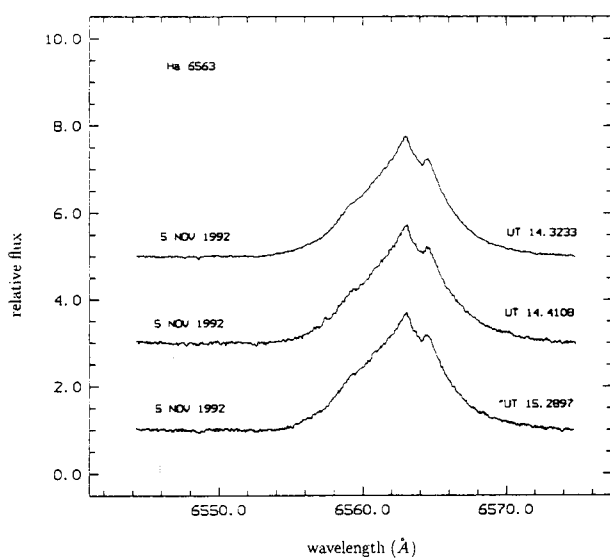


Figure 1. Spectral scans of  $\gamma$  Cas in H $\alpha$  region

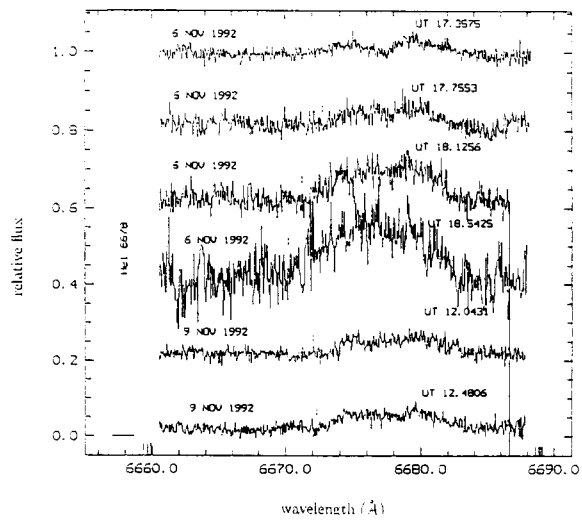


Figure 2. Spectral scans of  $\gamma$  Cas in He I  $\lambda$ 6678 region

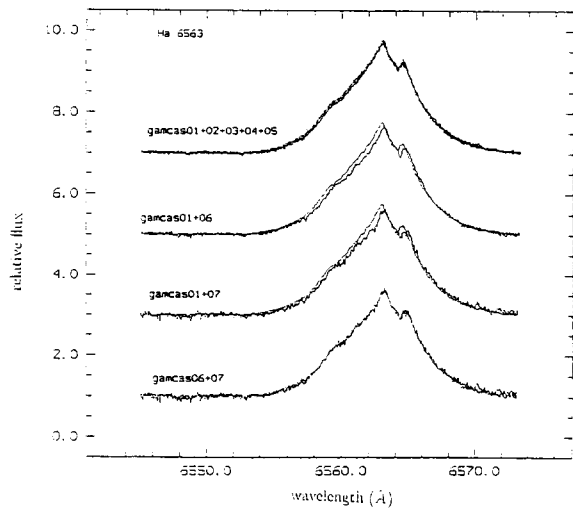


Figure 3. The red shifts of H $\alpha$  profile of  $\gamma$  Cas

Table 2. The results of the EW measurement of HeI6678 for  $\gamma$  Cas

No.	observing date	exposure time (min.)	Equivalent width ( $\text{\AA}$ )
1	6 Nov. 1992	20	-0.170
2	6 Nov. 1992	20	-0.212
3	6 Nov. 1992	20	-0.405
4	6 Nov. 1992	20	-0.996
5	9 Nov. 1992	20	-0.255
6	9 Nov. 1992	20	-0.169

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