

H α -emission behavior of γ Cas between 1976 and 2006

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Summary

Be stars are defined as non-supergiant stars with surface temperatures between 10.000 and 30.000 K which have shown emission lines in their spectra on at least one occasion. About 20 percent of B stars are in fact Be stars. As the definition suggest, the spectra of Be stars can vary with time. The behavior of γ Cas over the years displays just this.

Long-term observations of the intensity behavior of the H α -emission line of the Be star disk γ Cas carried out by the author between 1994 and 2006 - together with results of observations during the period from August 1971 to October 1989 by Horaguchi et al. (1994), November 1973 to November 2001 by Miroshnichenko et al. (2002), single observations from the author and some members of the spectroscopy-group of the "Vereinigung der Sternfreunde Germany" - have led to more than twenty years' observation of the star's overall behavior.

As a result of consultative discussions with with experts of the IAU working group on active B stars, the idea of publication in BSN developed. Above all, however, the examination results recently presented by Smith et al. (1998), concerning the X-ray production of the star and its correlation with the intensity behavior of the disk's H α - emission were the cause for the results presented here. It is not necessary to go into detail on the generation of spectra and data reduction which led to the results - they have already been discussed in Pollmann (1997).

As an amateur astronomer, the author does not take the liberty of relating the results of his observations presented here to the exceptional features of the physics of the circumstellar star shell or the gas disk, but confines himself to explaining the results which can be directly derivated from the behavior in the course of time. It is hardly possible to clarify, what are the reasons for the enormous dispersions from 1971 to Nov. 1992 (JD 2448946). If one subordinates however satisfying measuring security, could this is only explained with an enormous disk activity.

At JD 2449750 an eruption which lasted about four months could be observed which at its maximum of approx. 60 Å was nearly twice as powerful as the static equivalent width of approx. 30 Å. To this day, this eruption has not be confirmed by comparative measurements carried out by other observers. Due to the extremely favorable framework conditions or prerequisites for the careful determination of the equivalent width of the H α -emission of γ Cas, it will, in the future, also be able to ensure a high degree of observation so that in due course it will be possible to report here again about the further behavior.

References:

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