COMMON PROPERTIES OF SOME Be STARS OPTICAL POLARIZATION PARAMETERS

J. ARSENIJEVIĆ, S. MARKOVIĆ-KRŠLJANIN, A. KUBIČELA and S. JANKOV

Astronomical Observatory, Volgina 7, 11050 Beograd, Yugoslavia

Abstract. The long-term changes of the intrinsic polarization percentage are evident in the stars o And, γ Cas, 88 Her (during the period 1974-1992), κ Dra (1979-1992) and BU Tau (1986-1992). The amplitudes of the polarization percentage variations are not more than a half of the percent. The changes of the position angles are within an interval of about 30 degrees.

It is generally accepted that the presence of intinsic polarization of Be stars confirms the basic assumption of an extended non-spherically symmetric envelope, as well as the origin of polarization in scattering of non-polarized stellar radiation on free electrons in the envelope.

The long-term polarization variations, for years to decades have been examined in a very limited number of stars. The behaviour of polarization parameters during all activity phases (B, Be, shell ...) is not known with certainty.

Having in mind the importance of polarization data of Be stars, on one side, and ability to observe in a very long series with the same telescope available at Belgrade Observatory, on the other, a program of stydying long-term optical polarization changes has been set up in 1974. The aim was to obtain reliable long-term data on polarization changes in V spectral region and examine these changes during different activity phases of Be stars.

Polarimetric observations at Belgrade Observatory were carried out with the 65-cm Zeiss refractor and the stellar polarimeter (Kubičela *et al.* 1976) which was modified in 1979 to enable one to obtain digital magnetic records suitable for further computer processing. The measurements were done in the V spectral region. Under "one measurement" we understand up to 8 one-minute polarimetric sine-wave signals phase-averaged. The typical standard deviation of one 8 – minute measurement is 0.07% for Stokes parameters. The interstellar components were estimated or used from the literature. For the star o And the observed polarization is presented.

In Fig. 1 the individual measurements of the observed polarization percentage (a) and corresponding position angles (b) of the star o And are shown. Figure 2a and b displays the intrinsic polarization percentage and position angles of the star 88 Her. The data for star κ Dra are presented in this Proceedings. The part of γ Cas data are published in the paper of Arsenijević *et al.* (1990). The BU Tau data are published in the article of Arsenijević *et al.* (1993).

From the sample of our polarimetric data of five stars and published data of V magnitude and H_α emission strength existing in the literature for the same star, one can come to the followinig conclusion:

The intrinsic visual polarization percentage for all five observed stars was smaller than 1 percent. The long-term variations of both intrinsic polarization parameters exsist for all five stars. The amplitude of the polarization percentage

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changes are not higher than 0.5 percent. The amplitude of the position angle variations are under 30 degrees. The anticorrelation between polarization percentage and visual brightness was noticed always, when data existed. The correlation between polarization percentage and H_α emission strength is firmly confirmed for some of our program stars. More data are needed for the final conclusion.

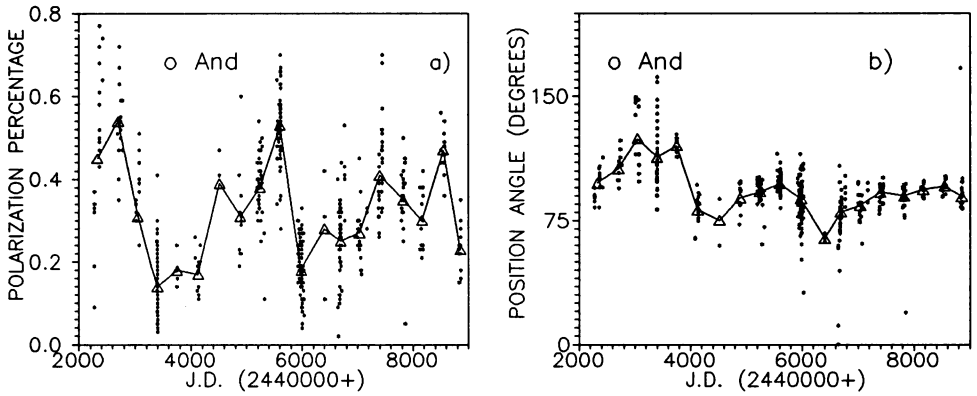

Fig. 1. *Polarization pertencage (a) and corrensponding position angle (b) of the star o And during the interval of time 1974 – 1992. Annual mean values are denoted by triangles.*

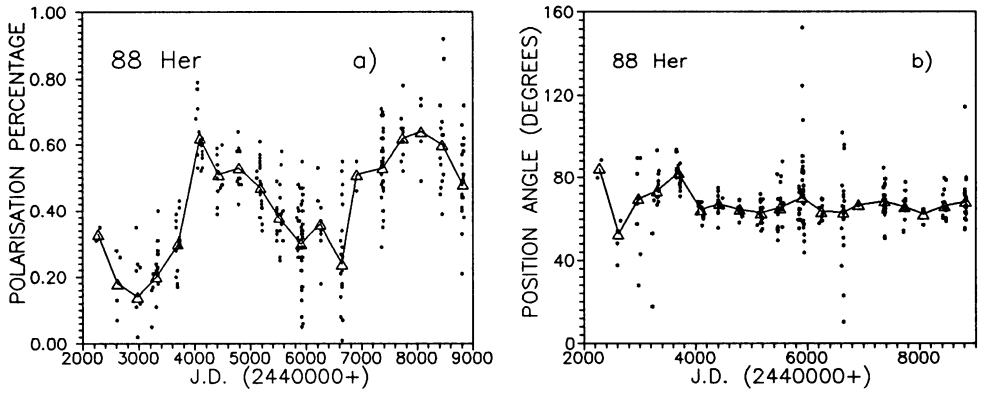

Fig. 2. *Same as in Figure 1, but for the star 88 Her*

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