INTRINSIC LINEAR POLARIZATION OF Be STARS AS A FUNCTION OF $v \sin i$

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Abstract. The polarization of 48 Be stars has been measured in two bands near Hα with the aim of determining the relation between intrinsic polarization and $v \sin i$. A technique developed by Poeckert (1975) is used to remove the effect of interstellar polarization. It is found that intrinsic polarization depends strongly on $v \sin i$; stars with low $v \sin i$ having little or no polarization. We have calculated the i dependence of linear polarization for a disk model envelope and find that the polarization is proportional to $\tau_e \sin^2 i$ when the disk is optically thin (τ_e is a characteristic electron scattering optical depth). A comparison of the observed relation between intrinsic polarization and $v \sin i$, and that predicted for the disk model is illustrated. We find that an envelope with an electron density of $\leq 5 \times 10^{11}$ cm^{-3} can account for the degree of intrinsic polarization observed in all the program stars. The fact that stars of low $v \sin i$ have little intrinsic polarization is evidence for the assumption that these stars are seen pole-on and that the envelopes around these stars are axi-symmetric. No apparent difference between pole-on stars and extreme Be stars was obtained.

Reference

Poeckert, R.: 1975, *Astrophys. J.* **196**, 777.

A. Slettebak (ed.), Be and Shell Stars, 277.