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POLARIMETRY OF Be STARS IN THE OPEN CLUSTER NGC 6611

Be stars most probably have symmetrical, disk-shaped envelopes. The lack of spherical symmetry produces a net amount of linear polarization through Thomson scattering in the envelopes. Polarimetric observations are thus a useful tool for testing theoretical Be star models.

In order to compare observations with theoretical predictions the interstellar polarization in the line of sight must be determined. Statistical methods including field stars are currently used (e.g. McLean and Clarke, 1979). These methods give better results for Be stars in open clusters, as spatial association with field stars is easily established. Moreover, once the cluster parameters ($m-M$, $E(B-V)$) are known, one readily obtains the absolute magnitude and dereddened colours of the Be star thus allowing more complete tests of the models.

In August, 1981 we started a program of UBVR polarimetric observations of southern open clusters. Measurements were made at the Observatório Astrofísico Brasileiro 1.6 meter telescope with the Instituto Astronômico e Geofísico (Universidade de São Paulo, Brasil) photopolarimeter (Magalhães, 1979).

Some preliminary results for the open cluster NGC 6611 are given in Table I.

Table I

Star number	v	Sp	p^B	θ^B	σ^B	p^V	θ^V	σ^V	Date
150	9.89	B0.5V				2.78	93.89	0.23	7-8/8/82
166	10.36	O9V				3.19	97.32	0.18	12-13/8/82
175	10.02	O6	4.24	79.37	0.30	3.24	70.63	0.19	12-13/8/82
351	11.26	B1Vne	2.00	68.97	0.40	1.48	82.31	0.36	7-8/8/82
367	9.43	O9.5	2.07	92.25	0.13	2.76	94.60	0.11	9-10/8/82
401	8.96	O8V	2.37	88.50	0.14	2.79	83.68	0.08	5-6/8/82
469	10.71	B1.5V	1.63	99.06	0.23	2.16	107.95	0.16	9-10/8/82

p and σ in %

Numbers in column 1 are from Kamp (1974), values in column 2 are from Walker (1961), for star number 469 spectral type is from Hiltner (1956). Other spectral types are from Hiltner and Morgan (1969). Columns 4,5 and 6 give the observed polarization values (in%), the polarization angle and the error

of measurement for p (%), respectively, in the B filter, columns 7,8 and 9 give the same for the V filter. Last column lists the dates of observations.

Measurements will be pursued on the next observing season. More observations are needed for determining the interstellar polarization throughout the cluster.

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References:

- Hiltner, W.A., 1956, *Astrophys.J. (Suppl.)* 2, 389
Hiltner, W.A., Morgan, W.W., 1969, *Astron.J.* 74, 1152
Kamp, L.W., 1974, *Astron.Astrophys.Suppl.* 16, 1
Magalhaes, A.M., 1979, Thesis, IAG/USP, S. Paulo, Brasil
McLean, I.S., Clarke, D., 1979, *Mon.Not.Roy.astr.Soc.* 186, 245
Walker, M.F., 1961, *Astrophys.J.* 133, 438