

PHOTOPOLARIMETRY OF SEYFERT GALAXIES -
NGC 2992, NGC 3081, NGC 3227 AND IC 4329 A

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Photopolarimetric observations in UBVRI bands of Seyfert galaxies NGC 2992, NGC 3081, NGC 3227 and IC 4329A were carried between 1984-87. Measurements were made with PRL polarimeter (Deshpande et al. 1985) on 1 meter telescope of Indian Institute of Astrophysics, Kavalur. Method of observations and reduction is same as discussed elsewhere (Joshi et al. 1987).

There is a divergence of opinion as to whether the polarization is due to synchrotron radiation from the nuclei or is caused by dust/electrons scattering. To understand the problems related to the energy source in the nuclei, four Seyfert were monitored during 1984-87 to detect possible time variability in different bands. Observations through varying apertures 11 arc sec to 30 arc sec were made to estimate the dilution of polarization due to stellar light from the background galaxy. Results are presented in Figure 1.

NGC 3081 shows significant time variation in degree of polarization and position angle in all the bands; V-band polarization changes between 1.34 ± 0.36 to $0.49 \pm 0.25\%$ within 1984-87. The observations are indicative of nucleus being strong non-thermal source.

IC 4329A presents an interesting case. Polarization decreases (2.52 to 1.29% in B band) with increasing aperture - 11 arc sec to 30 arc sec; the amount of variation is less in longer wavelength. Perhaps IC 4329A harbours strong non-thermal source at its nucleus. However, Martin et al. (1982) have attributed the increase in polarization towards shorter wavelength due to dust scattering. It is difficult to explain the present observations on the basis of model suggested by Martin et al (1982). The rise in polarization in blue may be due to wavelength dependent dilution by unpolarised star light. For NGC 2992 the degree of polarization is decreases with increasing aperture especially in I band. The data is indicative of strong non-thermal source at the nucleus. The presence of multiple components is also suggested. The polarization in NGC 3227 increases towards blue and also there is no significant variation with aperture in a particular band. This suggests that in NGC 3227 dust scattering is the main source producing polarization.

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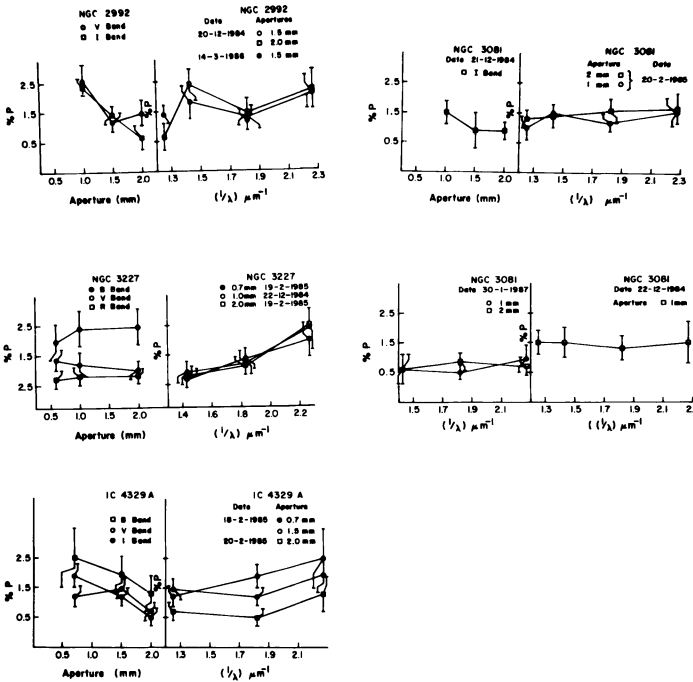


Fig.1 : Polarization measurement of Seyfert galaxies NGC 2992, NGC 3081, NGC 3227 and IC 4329A.