

OPTICAL-INFRARED CONTINUUM SPECTRA AND POLARIZATION OF QUASARS: AN OUTBURST IN 3C 279 DURING 1987-88

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We have observed a period of rapid and intense optical-infrared brightness and polarization variability in the quasar 3C 279. The observations were obtained as part of an ongoing study of the optical-infrared continuum evolution in a sample of optically violent variable (ÖVV) quasars and BL Lacertae objects. Simultaneous broadband *UBVRI* photometric and polarimetric observations are used to study the optical continuum spectral evolution and wavelength dependent linear polarization and to search for broad near-ultraviolet continuum spectral components.

3C 279 has been one of the most active quasars in our study during the past two years. Since early 1987, it has displayed rapid brightness variations, large night-to-night fractional polarization changes, visual polarization as high as 43% (the highest ever reported for a quasar), and weak wavelength dependent polarization. This period of optical-infrared activity appears correlated with millimeter wavelength radio variations.

During the four years prior to March 1987, our quarterly observations indicate that 3C 279 was inactive with a brightness near its historic minimum (Eachus and Liller, 1975) of $B > 17$. The quasar was moderately polarized, <15% (Smith *et al.* 1987; Sitko, Schmidt, and Stein 1985), with the fractional polarization increasing slightly with wavelength (Sitko, Schmidt, and Stein 1985) - a characteristic seen in some other high polarization quasars (HPQs) (Smith *et al.* 1988).

During a one week period in March 1987, the visual linear polarization increased from 10% to 35% while the polarization position angle changed from 65° to 105° (Figure 1). No optical-infrared wavelength dependent polarization was

observed during the onset of the polarization activity in March (Figure 2) or June 1987.

In May-June 1987, the brightness and polarization varied rapidly and erratically - the visual polarization was observed as high as 43% and the B magnitude as bright as 14. Through mid-1988, the quasar has remained bright near $B=14$ (this paper; IAU Circulars 4556, 4630, 4632, 4635, 4650) while the polarization decreased to 15%–20%. Since mid-1987 the polarization position angle has remained steady at 110° – 130° .

Perhaps correlated with this optical activity, a strong radio outburst commenced in late 1987 at 3-mm - with the flux density increasing from 6 to 15 Jy by mid-1988 (Balonek and Dent, private communication).

REFERENCES

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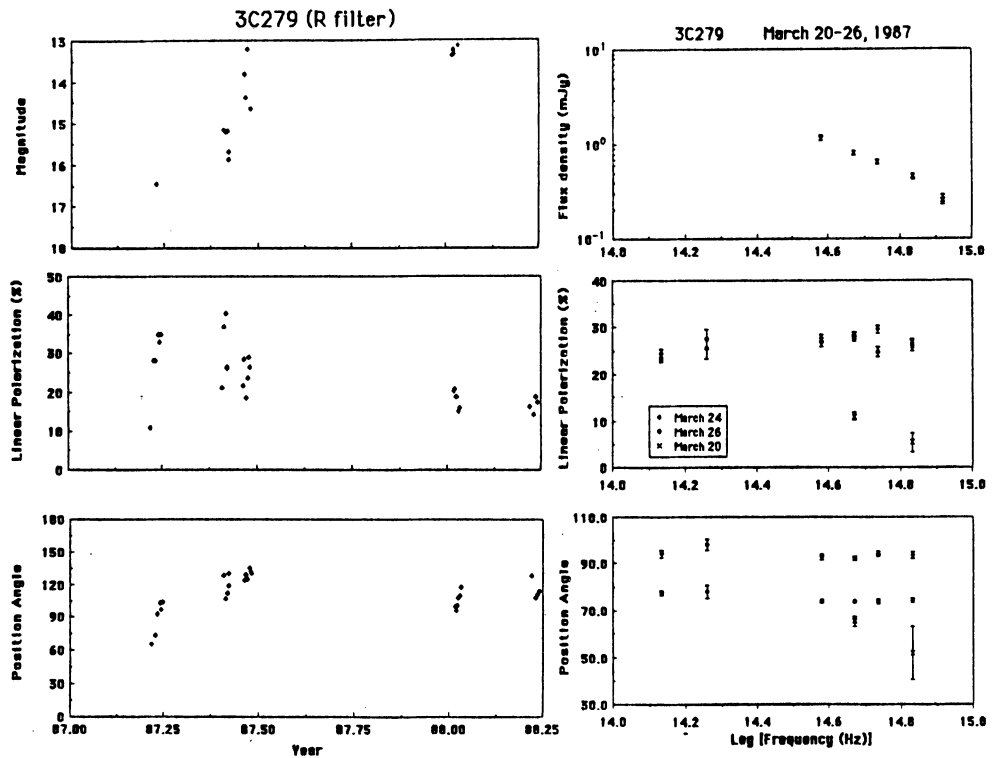


Figure 1: R filter observations of 3C 279 during 1987-88.

Figure 2: Multiwavelength optical-infrared intensity and polarization of 3C 279 during the onset of activity in March 1987.