

SIMULTANEOUS FIVE COLOR (UBVRI) POLARIMETRY OF VV PUPPIS\*

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ABSTRACT. Observations of linear and circular polarization in five colour bands during a highly active state of VV Puppis in January -86 are reported. A strong linear polarization pulse with the maximum in the blue,  $P_B \approx 22\%$ , is observed at the end of the bright phase when the active pole is at the limb and a weaker secondary pulse,  $P_B \approx 7\%$ , is seen in the beginning of the bright phase, when the active pole reappears. Strong positive circular polarization is also observed in the blue and the ultraviolet,  $P_U = P_B = 18\%$ ,  $P_V \approx 10\%$  during the bright phase. The circular polarization reverses the sign in the B and V bands during the faint phase and a negative polarization hump is seen when the active pole crosses the limb. The circular polarization in the V band reaches the value  $P_V \approx -10\%$  at the hump, after which it remains near  $P_V \approx -5\%$  during the faint phase. This is probably due to radiation coming from the second, less active pole and accretion thus takes place onto both poles. The wavelength dependences of the positive and negative parts of the circular polarization curve are different and no polarization reversal is seen in the U band. The position angle of the linear polarization is well determined during a large portion of the cycle, especially in the V band, thanks to the activity from both poles. A best fit to the position angle curve, taking into account also the duration of the positive circular polarization phase interval  $\Delta\phi = 0.40$  (in the V band), yields the values of orbital inclination  $i = 78^\circ \pm 2^\circ$  and the colatitude of the active magnetic pole  $\beta = 146^\circ \pm 2^\circ$ . The relatively good fit to the position angle data indicates that the simple dipole model is nearly correct in the case of VV Puppis. Some wavelength dependence is, however, seen in the position angle curves, especially in the I band where the slope  $\Delta\theta/\Delta\phi$  at the main pulse is considerably smaller than in the other bands. The shape of the position angle curves changes also in the blue and the ultraviolet around the middle of the bright phase. This is probably due to optical thickness effects as the side of the accretion column which is toward the observer changes near this phase.

\* Based on observations made at the European Southern Observatory, La Silla, Chile.

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