

The MPE fast timing photometer OPTIMA (Optical Pulsar Timing Analyzer, Straubmeier et al., 2001) has recently been equipped with a rotating polarization filter. This allows to determine the state of linear polarization of pulsars and other fast variable sources. For verification and as a first application of the new polarimeter we have observed the Crab nebula and pulsar during the recent campaign in January 2002 at the 3.6m telescope of the Calar Alto observatory. The wavelength range for these measurements extends from 450 to 950 nm. The analysis of about 3 hours of exposure (Kellner, 2002) resulted in the preliminary polarization characteristics of the Crab pulsar shown in figures 1 and 2.

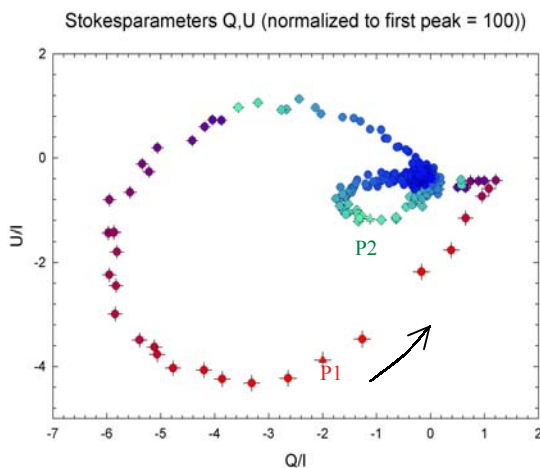
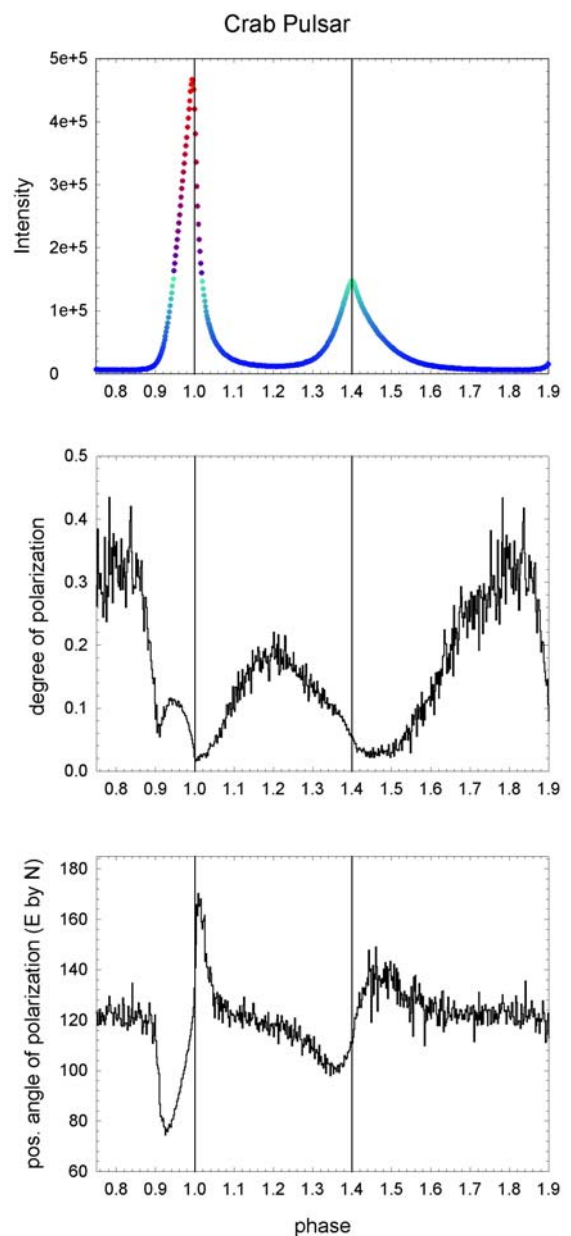


Figure 1: The normalized Stokes-parameters Q and U for linear polarization of optical light from the Crab pulsar (the peak 1 intensity was set to 100). The color coding corresponds to the lightcurve in figure 2 and the peaks are marked by a triangle. The pulsar rotational phase increases counter-clockwise

Figure 2: Lightcurve, degree of polarization and the position angle of the E -vector on the sky for the Crab pulsar. This result agrees well with a previous measurement by Smith et al., 1988 but shows details with much better definition and statistics. The interpretation of these data in terms of polarized synchrotron emission from the outer magnetosphere has just been started.



References:

- Kellner, S., Diploma thesis, to be completed June 2002, TUM
- Smith, F.G., et al., (1988) MNRAS, **233**, 305
- Straubmeier, C., et al., (2001) Exp. Astron., **11**, 157