

# X-RAY VARIABILITY IN V444 CYGNI: EVIDENCE FOR COLLIDING WINDS

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**Abstract.** Phase-resolved observations of the soft X-ray flux from the WN5+O6 binary V444 Cyg (WR139) have been obtained by ROSAT. The objective of these observations were: (1) to compare our results with previous observations made with the IPC (Moffat *et al.* 1982); (2) to explore the phase dependence of the X-ray variations; and (3) to look for evidence of the generation of X-rays from colliding winds in the system. ROSAT observed V444 Cygni with the PSPC five separate times, for a total integration time of about 20 ksec. Figure 1 shows the phase-binned light-curve along with archival IPC data. The observed X-ray variability can be modeled as a wind eclipse of an X-ray source by the WR wind. If most of the X-rays from the system are produced in a shock-heated region of wind interaction between the two stars, then the shocked gas has a large physical extent ( $r \approx 140R_{WR}$ ) if the observed variability is produced solely by the eclipse of the region by the WR wind. However, since the O star makes a significant contribution to the total X-ray flux from the system, the actual size of the shocked interaction region is probably much smaller.

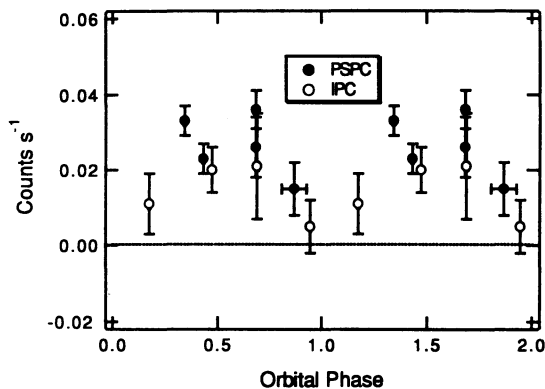


Fig. 1. The PSPC and IPC X-ray light-curve of V444 Cygni

## References

- Moffat, A.F.J., Firmani, C., McLean, I.S., Seggewiss, W. 1982, in: C.W.H. de Loore & A. Willis (eds.), Wolf-Rayet Stars: Observations, Physics, Evolution, *Proc. IAU Symp. No. 99* (Dordrecht: Reidel), p. 577