# OPTICAL COUNTERPART OF THE LMXB GX 13+1

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We have observed the IR counterpart of the Atoll type LMXB GX 13+1, (Naylor, Charles & Longmore 1991), from 1993 July 11...30, with the Dutch 90 cm telescope at ESO using a Gunn $z$ (0.9–1.0 $\mu$m) filter. Over this period 110 usable images (integration time 12 m) were obtained. The data were reduced using the ESO-MIDAS/DAPHOT reduction package. A Lomb-Scargle period search was performed with the PERIOD package.

Fig. 1 shows our Gunn $z$ band image with stars labeled as in Naylor et al. (1991). They propose their star 101 as the IR counterpart. Fig. 2 shows the light curve we obtained for this star. The star is clearly variable on a time-scale of $\sim$ 10 d. To estimate any period more accurately we have made a Lomb-Scargle statistics periodigram (see Fig. 3); maximum power is at 12.6 d. We estimate the error to be $\sim$ 1 day.

The time interval covered by our observations (18 d) is too short to establish the periodicity of the variation. If the orbital period is long as is suggested by our results it may be difficult to understand the difference between Atoll and Z sources on the basis of simple evolutionary arguments (see e.g. Lewin, van Paradijs & van der Klis 1988).

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## References

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Lewin, H.G., van Paradijs, J., van der Klis, M., 1988, Sp. Sc. Rev., **46**, 273



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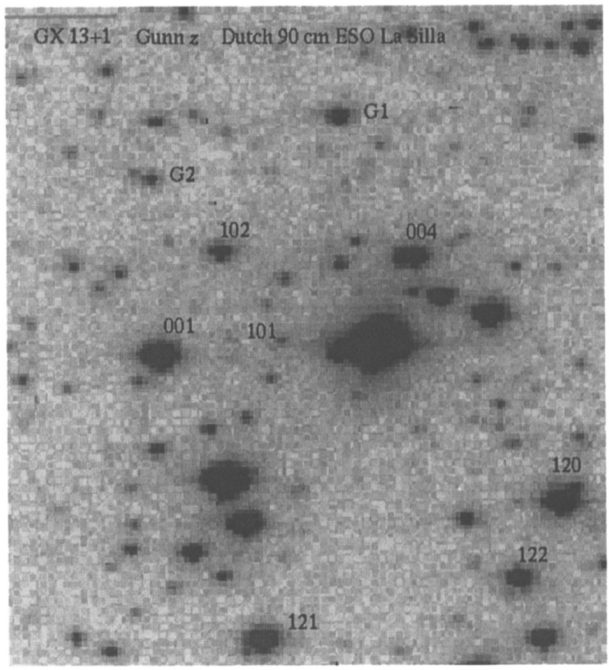


*Figure 1.* Gunn $z$ band image of GX 13+1. Star 101 is the IR counterpart.

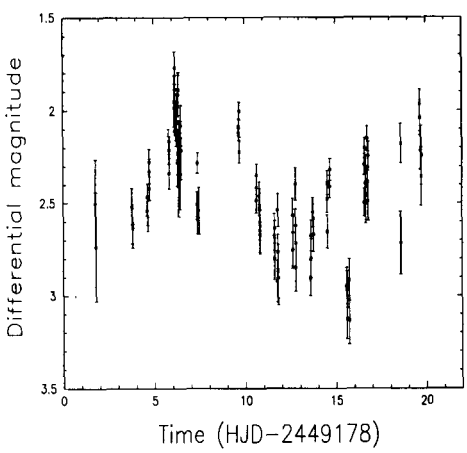


*Figure 2.* Light curve of star 101 in Fig. 1. Magnitudes in units of average magnitude of comparison stars.

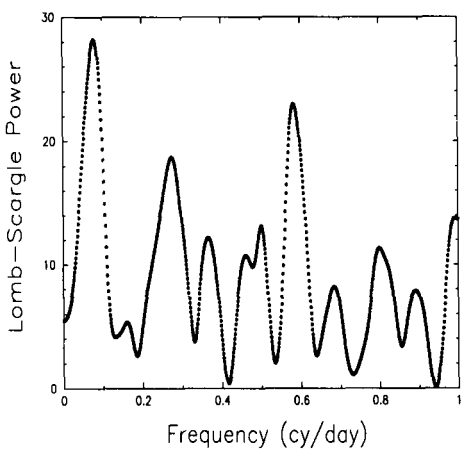


*Figure 3.* Lomb-Scargle statistics power spectrum of the light curve in Fig. 2.

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