

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS

Number 1679

Konkoly Observatory
 Budapest
 1979 September 28

OBSERVATIONS OF X PERSEI IN THE U B₂ V₁
 COLOURS OF THE GENEVA SYSTEM

We have observed X Persei, the optical counterpart of the X-ray source 4U 0352+30, with the 1m telescope at Gernergrat, on the nights of Jan. 31, Feb. 3 and Feb. 14, 1979 (the only nights suited for photometry between Jan. 26 and Feb. 16). The instrument was equipped with the Geneva photometer (Rufener, 1964). We observed in the U B₂ V₁ colours of the Geneva system (cf. Golay, 1963).

The comparison stars are :

C1 : HR 1074 = HD 21856 (B₁ V, m_V=5.90, U=0.383, B₂=1.592, V₁=1.751)
 C2 : HR 1163 = HD 23625 (B₂ V, m_V=6.56, U=0.649, B₂=1.530, V₁=1.586).

The colours cited are those given in the second catalogue of Geneva photometry (Rufener, 1976). HR 1074 has been used before as comparison star for X Per and is known to be non-variable (de Loore et al., 1979). HR 1163 was chosen from Rufener's catalogue; the small standard deviation on the measured colours makes it plausible that this star does not vary.

Table 1

	U	B ₂	V ₁
C1-C2 catalogue	-.266	+.062	+.165
Jan. 31	-.251±.004	+.064±.004	+.160±.005
Feb. 3	-.246±.003	+.067±.003	+.162±.003
Feb. 14	-.258±.004	+.061±.005	+.153±.004
XPer-C1 catalogue	-.028	-.070	-.385
Jan. 31	+.193±.004	+.150±.005	-.030±.006
Feb. 3	+.191±.006	+.147±.007	-.034±.006
Feb. 14	+.212±.006	+.158±.006	-.020±.006
XPer-C2 catalogue	-.294	-.008	-.220
Jan. 31	-.058±.002	+.214±.002	+.128±.004
Feb. 3	-.055±.005	+.214±.007	+.128±.007
Feb. 14	-.046±.005	+.218±.003	+.133±.007

In Table 1 we compare our observed averages of the difference in colour with those computed from the catalogue. It is seen

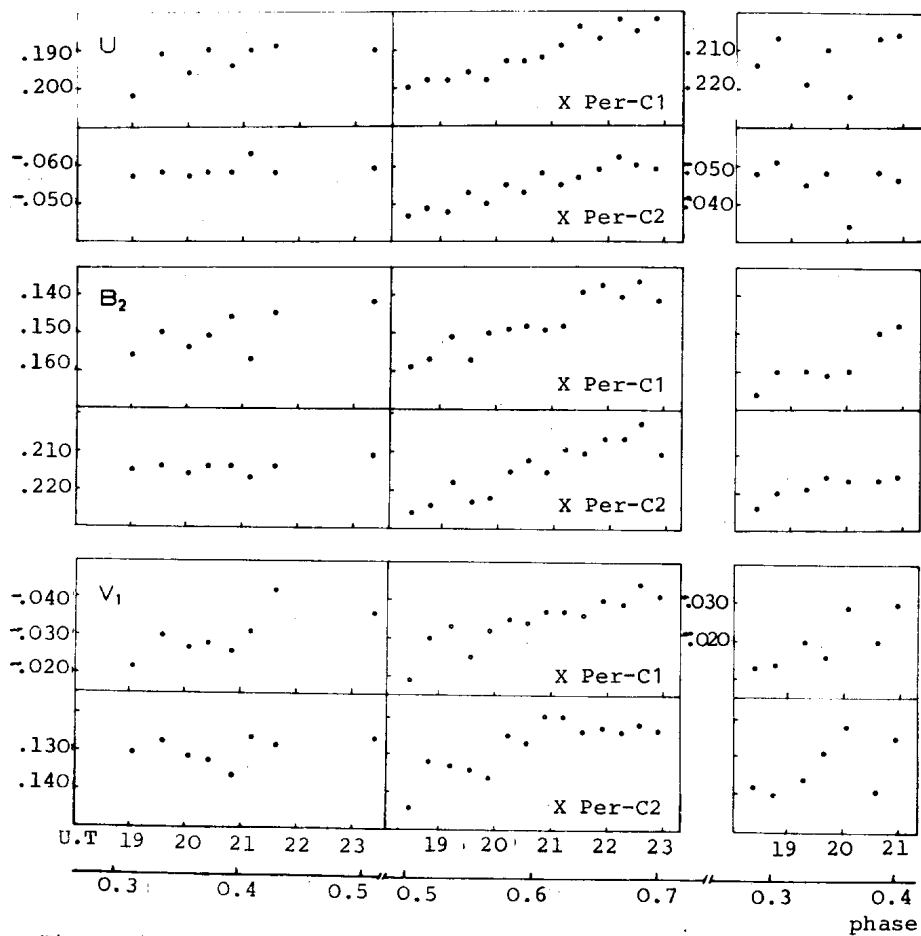


Figure 1 :

Differential measurements of X Per relative to the comparison stars C1 and C2 on the three different nights (J.D. 2443000+905, 908 and 919). The phase (with arbitrary 0) in case of a 22.4 hour periodicity is also indicated.

that X Per is 0.2 to 0.3 magnitude fainter in our observations. Dorren, Guinan and McCook (1979) expect the star to be at its faintest towards the end of 1979.

The complete tables with the individual measures will be published in the Bull.Astron.Obs.Roy.Belg. 9, No.3. The results are shown graphically in Figure 1. As found earlier by other observers (e.g. Ferrari-Tonioli et al., 1977; Margon et al., 1976) there are indications of irregular activity, but not of the 22.4 hour period (or 11.2 hour) reported by White et al.(1976). At a first glance at the figure there seems to be a small drift in magnitude during the second night, of the order of 0.01 (which is slightly above the 1σ level). If one accepts the variation as real, it does not match the 22 hour periodicity, as one can see from the discontinuity at phase 0.5 on two different nights (the phase distribution is indicated in the figure; phase 0 was taken arbitrarily at JD 2443905.0). The distribution of our observations was such, that in case of a 22.4 hour period 42 % of this period is covered.

We were very happy to be able to use the photometer of the Observatoire de Genève and we thank N. Cramer for the advice he so kindly gave us.

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References:

- Dorren, J.D., Guinan, E.F. and McCook, G.P.: 1979, I.A.U.Circ.No.3352
Ferrari-Toniolo, M., Natali, G., Persi, P. and Spada, G.: 1977, Astron. Astrophys. 61, 47
Golay, M.: 1963, Publ.Obs.Genève A66, 413
de Loore, C., Altamore, A., Baratta, G.B., Bunner, A.N., Divan, L., Doazan, V., Hensberge, H., Sterken, C. and Viotti, R.: 1979, Astron. Astrophys.
Margon, B., Bowyer, S., and Penegor, G.: 1976, Mon.Not.Roy.Astron.Soc. 176, 217
Rufener, F.: 1964, Publ.Obs.Genève A66, 413
Rufener, F.: 1976, Astron.Astrophys.Suppl. 26, 275
White, N.E., Mason, K.O., Sanford, P.W. and Murdin, P.: 1976 Mon.Not.Roy. Astron.Soc. 176, 201