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PHOTOMETRY OF LX Pup AND XX Pup

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Strohmeier (1966) reported on a new variable, BV 677 (BD $-16^\circ 2312$) that he classified as a cepheid, brightness $\sim 9\overset{\mathrm{m}}{.}5$, amplitude $\sim 0\overset{\mathrm{m}}{.}5$, and with epoch and period of

$$\mathrm{Max} = \mathrm{JD}\ 2437314.25 + 13\overset{\mathrm{d}}{.}88 \times E.$$

While Strohmeier did not give coordinates, the BD catalog identification yields coordinates of $08^\mathrm{h}01^\mathrm{m}47\overset{\mathrm{s}}{.}2$, $-16^\circ 2\overset{\prime}{.}4$ (1855); these precess to $08^\mathrm{h}08^\mathrm{m}24\overset{\mathrm{s}}{.}6$, $-16^\circ 27\overset{\prime}{.}5$ (J2000). No finding chart was given; the GCVS indicates either the BD catalog or the AAVSO Variable Star Atlas for identification. Because it could be a relatively nearby cepheid, LX Pup was also placed on the Hipparcos program (HIP 39840, GSC 5996–00713), but this star is noted to be incorrectly identified with LX Pup in the Hipparcos Input Catalogue. The Hipparcos coordinates are:

$$\text{R.A. } 08^\mathrm{h}08^\mathrm{m}23\overset{\mathrm{s}}{.}35, \quad \text{Decl. } -16^\circ 28'16\overset{''}{.}7 \text{ (J2000)}.$$

This star has median magnitude of $H_p = 10.797 \pm 0.006$ and so was constant at the time of the Hipparcos mission.

A few years ago, Szabados (1996) recommended this star to Henden as a southern cepheid for which no photometry was available. It was placed on the observational program at the U.S. Naval Observatory, Flagstaff Station, using the 1.0-m telescope along with a 1024×1024 SITe/Tektronix CCD and BVR_cI_c filters. Lund observed the field as well at South Africa, using a 0.32-m telescope along with a CB245 (TC-245) camera and a Johnson V filter. Our CCD frames, as well as the DSS, do show a bright star at the Hipparcos coordinates. However, this star is quite red:

V	$B-V$	$V-R$	$R-I$
10.666	+1.638	+0.924	+0.906

with errors under one percent. The star is constant over a two-year monitoring interval. At the same time, we notice that there is another variable located about 5 arcmin south of this position, XX Pup (GSC 5996–00727). Using USNO-A2.0, we measure its coordinates to be:

$$\text{R.A. } 08^\mathrm{h}08^\mathrm{m}28\overset{\mathrm{s}}{.}22, \quad \text{Decl. } -16^\circ 31'59\overset{''}{.}7 \text{ (J2000)}$$

with mean magnitude and colors of

V	$B-V$	$V-R$	$R-I$
10.071	+0.302	+0.214	+0.242

Other than XX Pup, there are no stars with variation that are brighter than $V = 15$ and within 5 arcmin of GSC 5996–00713.

We refined the period of XX Pup using the unequally sampled Fourier transform method of Scargle (1982). This gave us a period and epoch of

$$\text{Max} = \text{JD } 2450107.494 + 0^{\text{d}}.517195(2) \times E.$$

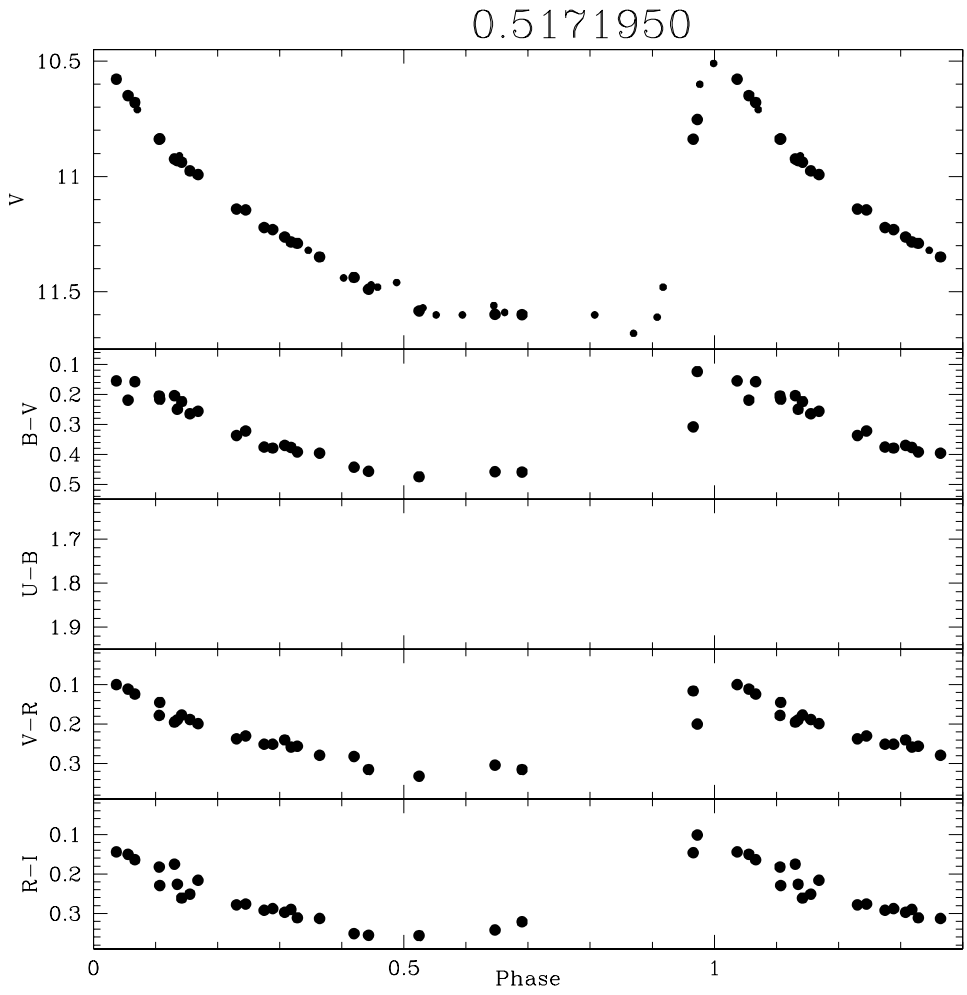

Figure 1. Light Curve for XX Pup

We present in Figure 1 the phased light curve for XX Pup where the small dots are Lund data and the large dots are Henden data. Complete photometric data for XX Pup can be found at Henden (2000a). We used as comparison and check star the following:

Star	GSC	R.A. (J2000)	Decl.	V	$B-V$	$V-R$	$R-I$
comp.	5996–00413	$08^{\text{h}}08^{\text{m}}14^{\text{s}}.40$	$-16°31'18''.1$	11.889	0.469	0.286	0.279
check	5996–00701	$08^{\text{h}}08^{\text{m}}11^{\text{s}}.22$	$-16°29'51''.6$	11.626	0.416	0.251	0.244

with mean errors under one percent. BVR_cI_c photometry for all stars in the LX Pup field can be found at Henden (2000b).

We phased Strohmeier's maxima according to this period, and found no correlation. It is unlikely that Strohmeier mistook XX Pup as a new variable. Either GSC 5996–00713 was variable during the 1960's, and is constant now, or else the identification is incorrect and some other star more than 5 arcmin from GSC 5996–00713 is the true LX Pup.

We gratefully acknowledge the assistance of Brian Skiff in finding the AAVSO Variable Star Atlas in the shelves of the Lowell Observatory and faxing the appropriate page.

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