COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS
Number 3785

Konkoly Observatory
Budapest
5 October 1992

HU ISSN 0324 - 0676

GSC 5198.00659, THE NEW VARIABLE IN AQUARIUS IS A W UMA SYSTEM

During a test phase run with the recently completed high speed photocounting double beam photometer at the 1 m Cassegrain/Nasmyth telescope of the Hoher List Observatory, we observed the new variable in Aquarius GSC 5198.00659 (RA 2000=$21^h21^m24^s.9$; Dec. 2000=$-3°09'38".4$) on 8 nights in August/September, 1992 in V-spectral range. The variability of this object was recently announced by R. Gil Hutton in IBVS No. 3723.

As the double beam photometer allows the simultaneous observations of two stars only within the telescope field of 20 arcmin, we had to use another comparison star than those given by Hutton namely SAO145329: RA 2000= $21^h21^m46^s$, Dec. 2000=$-3°11'58"$. The measurements were carried out with a time resolution of 1 sec in blocks of 5 to 10 min length, with relevant 2–3 min interruptions for sky–, dark– and lightsource observations and recentering the objects. Due to the northern latitude of the Hoher List Observatory the variable could be observed no longer than 5–6 hours per night.

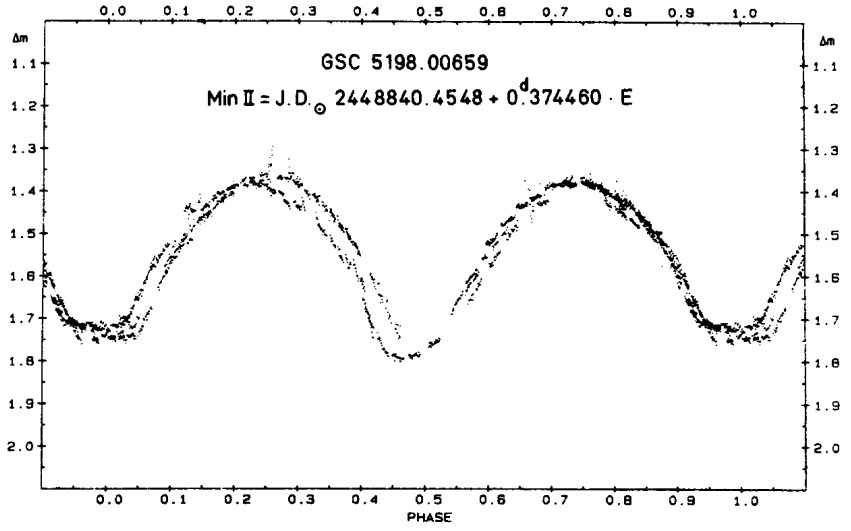

Fig.1: The composite V–lightcurve of GSC 5198.00659 obtained on the nights August 5, 6, 7, 8, 27 and September 16 and 17, 1992. Each point is the average of 30 one second integrations.

Table I

JD_{Hel}		O−C	Weight
2440000+			
	Min I		
8842.5161::		+0.0046	1
8883.3281		−0.0065	3
	Min II		
8840.4544		−0.0011	3
8841.5749:		−0.0088	1
8843.4507		+0.0005	3
8850.5641::		−0.0031	1
8862.5514		+0.0091	3
8882.3932		−0.0032	3
8883.5173		−0.0013	3

The observations yield a lightcurve of W UMa type (Fig.1), having a total 'occultation' minimum (Min II) with an amplitude of about 0.37 mag. Its form and depth was changing within 40 days by 0.04 mag. The 'transit' minimum (Min I) was well observed up to now only once, and has a depth of about 0.40 mag.

Light curve variations outside the eclipces, especially before and after Min I and after Min II of about 0.05 mag were also present within the above mentioned observing run. This indicates that both components show strong chromospheric activity presently in the inner Langrange point region. On account of these outstanding lightcurve variations the system should also be a variable X−ray source.

From 7 observed Min II, given in Table I, we derived the following light elements:

$$\text{Min II}=JD_{hel}\ 2448840.4548+0^{d}.374460\times E \qquad (1).$$

An objective prism plate of 75 min exposure, taken by V. Mette with our 35/50/137.5cm Schmidt camera does not show clear spectral lines on account of the rapid rotational line broadening. Comparing this smeared 'continuous' spectrum with those of the neighbouring stars we conclude that the spectral type is conform with the B−V=0.70±0.065 colour given by Hutton, indicating a G5 type.

J. SCHIRMER
E. H. GEYER
Observatorium Hoher List
der Universität Bonn
D−5568 Daun, F. R. Germany