

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

Number 3375

Konkoly Observatory  
Budapest  
21 September 1989  
HU ISSN 0374 - 0676

**The May–July 1989 crisis of V348 Sgr**

V348 Sgr is a unique variable star apparently related to the R CrB group (see the recent studies by Pollacco 1989 and Houziaux *et al.* 1987). The star happens to spend most of its time either near maximum ( $V \sim 12.5$ ) or near minimum ( $V > 18$ ). It is imbedded in a faint emission nebula which may make measurement or even detection impossible in the minimum episodes.

The stable phases usually last for several months (typically 8 to 9), but much faster events have been detected. In the absence of a daily monitoring the coverage of such fast episods is essentially a matter of luck. For instance in August 1981 a complete minimum (including decline and recovery) took about three weeks (Heck *et al.* 1982), but only part of the decline could be monitored photoelectrically. The descent was then clocked at about 2 mag/day in  $V$ . A few other short lived minima were recorded (in August 67 for instance, Duruy 1970), but the data are very scarce.

Experienced visual observers noted that a similar event occured in 1989. It was first caught visually by McNaught (Marsden 1989a) who reported a fading from 12.5 in March and April to fainter than 13.9 on May 5. On May 17, the star was observed visually by Verdenet (Marsden 1989b) at  $V = 15$ , while as of June 3 it was seen back at the maximum by A. Pearce (Marsden 1989).

Remarkably enough this maximum did not last very long. In the beginning of July we were lucky to follow the first days of a new decline with the ESO 1m telescope on La Silla (Table 1). The ESO single channel photoelectric photometer was used in the Strömgren  $b$  band. The rate of variation was marginally slower than that observed in 1981. During the three hours period centered on JD 2,447,714.8 the decline rate  $\Delta b/\Delta T$  is estimated to be about 1.35 mag/day while, in 1981, between JD 2,444,837 and 2,444,838, a value of 1.6 mag/day was observed in  $b$ . This should have lead to fainter than magnitude 18 by July 9.

Between June and August, several plates were taken with the Schmidt telescope at the Haute-Provence Observatory (Table 2). The second plate, obtained on July 14, and all subsequent ones, until August 31, show that V348 was effectively in its quiescent phase. Curiously enough, Marsden (1989b) reports a visual estimate of 14.0 by J. Bortle on July 9.13. If confirmed, this would imply an irregular descent with secondary maxima. On the other hand the field of V348 Sgr is very crowded,

**Table 1.** Strömgren *b* photometry of V348 Sgr

JD <sub>⊕</sub> +2,440,000.000	Strömgren <i>b</i>
7711.811	12.9206
7711.813	12.9226
7712.799	13.0468
7712.800	13.0270
7714.742	14.1530
7714.743	14.1536
7714.750	14.1667
7714.751	14.1722
7714.767	14.1604
7714.769	14.1701
7714.787	14.2187
7714.789	14.2513
7714.812	14.2899
7714.813	14.2847
7714.832	14.2705
7714.833	14.2443
7714.854	14.2903
7714.856	14.2883
7714.866	14.3191
7714.867	14.3350

**Table 2.** V348 Sgr magnitudes on Schmidt photographs. The star was often too faint to be recorded. The magnitudes obtained with IIIaJ plates and TP2415 sheet films are not directly comparable to Strömgren *b*. This is not too important in view of the large variations we are dealing with.

JD <sub>⊕</sub> +2,440,000.00	Emulsion	Magnitude
7685.06	IIIaJ	12.5
7722.96	IIIaJ	> 18
7736.96	IIIaJ	> 16
7765.84	IIIaJ	> 18
7766.88	IIIaJ	> 18
7767.84	IIIaJ	> 16
7768.92	TP2415	> 14
7769.85	TP2415	> 18

and closeby stars of magnitudes 14.4 and 14.8 have often be mistaken for V348 Sgr when at minimum.

The double event of May–July 1989 may be similar to what happened in August–October 1967. Unfortunately only a few visual observations were recorded. There is also some indications that an analogous behavior occurred in September–November 1975. (See Fig. 1 of Heck *et al.*). It is quite probable that several other instances went unnoticed. Obviously a much more extensive coverage of the light-curve is needed before a clear understanding of the photometric variations is obtained.

J. MANFROID, L. HOUZIAUX  
 Institut d'Astrophysique  
 Université de Liège  
 B-4200 Liège  
 Belgium

#### References

DURUY, M.: 1970, *Bull. Soc. Roy. Sci. Liège* **39**, 600  
 HECK, A., HOUZIAUX, L., MANFROID, J.: 1982, *Information Bull. on Variable Stars* **2184**  
 HOUZIAUX, L., BOUCHET, P., HECK, A., MANFROID, J.: 1987, *Quart. J. Roy. astr. Soc.* **28**, 231  
 MARDEN, B.: 1989 a, *IAU Circular* **4780**  
 MARDEN, B.: 1989 b, *IAU Circular* **4821**  
 POLLACCO, D.L.: 1989, *Ph. D. Thesis*, University of St. Andrews