

## V3890 SAGITTARII BRIGHTNESS UPDATE

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### Abstract

Recent examinations of Maria Mitchell Observatory photographic plates of V3890 Sagittarii reveal that this star was not as bright as was originally published. Updated light curve information is given.

### 1. Introduction

Nova Sgr 1962 (V3890) was discovered in 1973 on Maria Mitchell Observatory (MMO) plates by Dinerstein (1973). Dinerstein derived a photographic light curve for the nova by visual comparison of the star and a nearby Harvard sequence. The brightest star in the Harvard sequence was magnitude 11.8, so Dinerstein extended the sequence, using the *Smithsonian Astrophysical Observatory Star Catalog* to find brighter stars. Dinerstein's light curve showed that the nova faded from near 9th magnitude at JD 2437818 to about 15th magnitude at JD 2437847 (Dinerstein 1973).

During the summer of 1990, Wenzel was prompted, by an announcement of a possible recurrence of Nova Sgr 1962 (Jones 1990), to check the available plates of the Sonneberg Sky Patrol for the nova. Wenzel estimated that the nova was actually no brighter than magnitude 10.5, using plates that were taken at the date of the MMO discovery plate of June 2, 1962 (Wenzel 1990).

Wenzel's publication motivated me to re-examine the photographic plate collection from the MMO in order to derive a more precise light curve of Nova Sgr 1962.

### 2. New Data

I have derived a light curve for V3890 Sgr by visually comparing its brightness to a sequence of nearby stars (Figure 1). The MMO plates cover approximately 14 x 17 degrees of the sky, so I was able to calibrate magnitudes for these comparison stars by using a sequence of stars from the nearby cluster M22 that have photoelectric-based magnitudes (Alcaino 1977). Photometric readings were made from MMO plates of this object spanning the years 1962-1990 using a Cuffey Iris photometer. I obtained photometric measurements for the sequence of stars around M22 and of local comparison stars around V3890 Sgr. Plots of the iris photometer measurements for the M22 standards against their known photoelectric magnitudes produced hyperbolic curves which gave the relationship between the iris photometry and the photoelectric magnitude scale. Using these curves I obtained photoelectric-based photographic magnitudes from the iris measurements of the comparison stars local to V3890 Sgr. Table 1 gives the averaged magnitudes of these comparison stars, taken from the eight highest quality plates measured. The indicated error represents the standard deviation about the mean of the set of photometric readings from the eight plates, for each comparison star.

Table 1. Photographic Magnitudes of Comparison Stars

<i>Star</i>	<i>Magnitude</i>
a	11.43 ± 0.13
b	12.70 ± 0.09
c	13.49 ± 0.25
d	14.05 ± 0.29
e	14.14 ± 0.26
f	14.84 ± 0.34
g	15.02 ± 0.34
h	15.55 ± 0.29

### 3. Conclusion

From visual comparisons with this local sequence of comparison stars, I derived a new light curve for V3890 Sgr (Figure 2). The brightness of this star never exceeded magnitude 10.9 on the plates available from the MMO collection. The faintest this star can be traced on the MMO plates is approximately magnitude 15.5.

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### References

- Alcaino, G. 1977, *Astron. Astrophys. Suppl.*, **29**, 383.  
 Dinerstein, H. 1973, *J. Amer. Assoc. Var. Star Obs.*, **2**, 71.  
 Jones, A. F. 1990, *I.A.U. Circ.*, No. 5002.  
 Wenzel, W. 1990, *Inf. Bull. Var. Stars*, No. 3517.

[Ed. note: AAVSO data files indicate that the star reached 8.1 magnitude on JD 2448008 (April 26, 1990) and declined to 13.4 by JD 2448038 (May 26, 1990). Due to the recurrence of the outburst this object cannot be classified as a nova. In the *Third Supplement* to the Third Edition of the *General Catalogue of Variable Stars* (Kukarkin *et al.* 1976) the editors note on page 302, "In the position of the nova the star varies from magnitude 15.4 to magnitude 17.0. It resembles the U Gem type stars. For the present it is impossible to say either (sic) this star is a nova or its close optical component." In fact, the Fourth Edition of the *General Catalogue of Variable Stars* (Kholopov *et al.* 1985) classifies V3890 Sgr as a Z And-type symbiotic star; G. Williams' article in *Astrophys. J. Suppl.*, **53**, No. 3, 523 (1983) is the source of this classification.]