

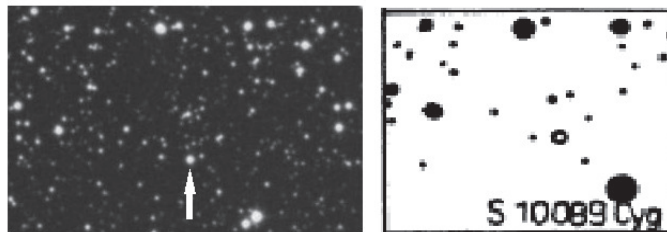
NSV 13636 Classification Revised

Being initially referenced by C.Hoffmeister as S 10089 Cyg, a long-periodic suspect, the NSV 13636 was finally resolved to SRA variable with period of 168.5 days.

The NSVS 5897136 photometric data set was initially pointed out by Ivan Adamin as the red object worth to revise back in 2012.

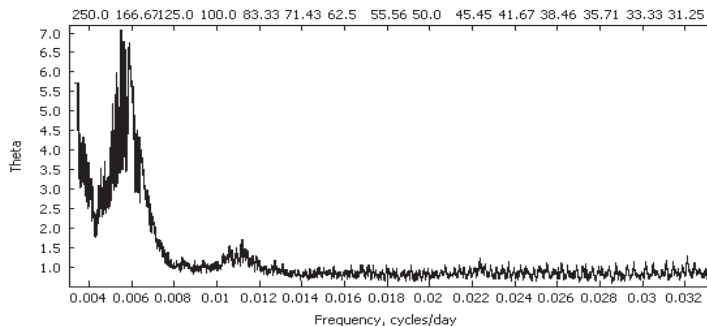
NSV 13636 (SRA)	
AAVSO UID:	000-BLC-565
Constellation:	Cygnus
J2000.0:	21 16 54.19 +41 33 56.1
Mag. range:	14.4 - <15.4 V
Epoch:	HJD 2451631.0 (27 Mar 2000)
Period:	168.5 days

Hoffmeister, in his "Mitteilungen über neuentdeckte Veränderliche Sterne" (1967), referenced the object called S 10089 Cyg (J1855.0: RA = 21h 11.4m; DEC = +40° 58') as a long-period variable, but no precise type or period were declared. Though there was a finding chart published in the same paper, related to the "Field 20h58m+44°" (Epoch 1855.0) in Cygnus, which is quite close to the famous planetary nebula NGC 7027.



Hoffmeister's finding chart for **S 10089 Cyg** (right) and the DSS chart for **NSV 13636** (left)

Comparing Hoffmeister's chart with the DSS plate for the mentioned region one can unambiguously figure out that S 10089 Cyg, NSVS 5897136 and NSV 13636 is exactly the same object referenced by different names.



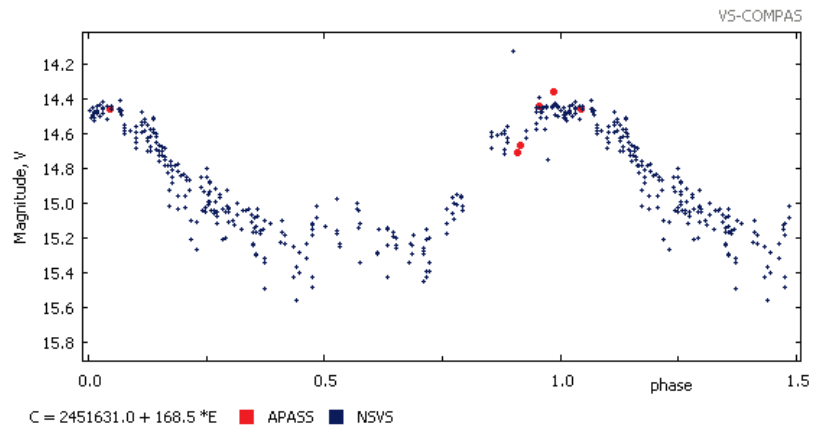
Periodogram for the **NSV 13636** data.

A period search was performed on the NSVS data by Siarhey Hadon (VS-COMPAS project). Calculated periodogram has a strong peak around 168.5 days. This period has a good match with a contemporary data from the APASS survey, conducted by the AAVSO.

Moreover, APASS data was obtained around the maximum brightness, giving a good match with the NSVS photometry. The star is in highly populated area in Cygnus, means there are some close neighbors around contaminating the light for wide-angle optics.

Particularly, the NSVS magnitudes of are contaminated by the following stars:

- 1) 2MASS J21165325+4133591
J-K= 1.59, V= 17.1, sep. 9"
- 2) 2MASS J21165635+4134093
J-K= 0.24, V= 16.6, sep. 27"
- 3) 2MASS J21165663+4133582
J-K= 0.28, V= 17.5, sep. 28"
- 4) 2MASS J21165651+4134144
J-K= 0.71, V= 17.5, sep. 32".



NSV 13636 in Cygnus. Period is 168.5 days
by Ivan Adamin, Siarhey Hadon (VS-COMPAS)

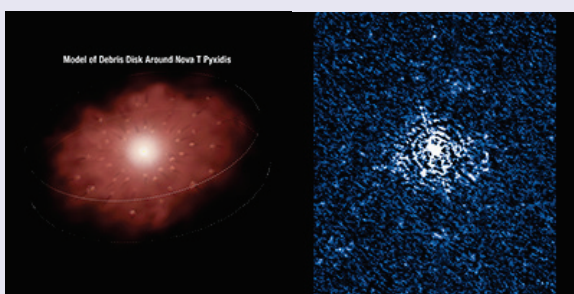
To get the real magnitude range, there was a deblending method applied to the light curve data. This is allowed to get a better estimate for the minima. The VSX record for NSV 13636 was updated with the new data, so NSV 13636 joined the ranks of known variable stars.

This is a good candidate to complement the list of 177 other NSV records listed in the "Confirmation of 177 objects in the New Suspected Variables Catalogue as red long period variables" (Greaves, 2006), though Greaves processed ASAS3 time series data. NSV 13636 was not covered by ASAS3 survey, unfortunately.

Ivan Adamin

HST Reveals Debris Disk Around T Pyxidis

T Pyx is a recurrent nova, erupting every 12 to 50 years and ejecting material that has formed the disk around the bright star. Hubble Space Telescope photographed T Pyx's latest outburst in April 2011, giving a rare look at stellar eruption in details.



Debris disk around T Pyxidis star

Credit: NASA, ESA, A. Crotts, J. Sokoloski, and H. Uthas (Columbia University), and S. Lawrence (Hofstra University)

The light echo after explosion in the double-star system reveals that material ejected by previous T Pyx outbursts is sticking around the star and form a debris disk. The study represents the first time the area around an erupting star has been mapped in three dimensions, researchers said. According to their measurements, the debris disk is about 1 light-year wide.

The erupting T Pyx star is a white dwarf, the burned-out core of a star much like our own sun. White dwarfs are small but dense objects. Imagine the mass of the sun packed into a volume the size of Earth.

The system is binary, hence has a companion star. The believed reason of the explosion is a high volume of hydrogen on the white dwarf's surface built up by accretion from a companion star. Typical outbursts increase T Pyx's brightness ten thousand times over a single day. Apart from the 2011 event, eruptions were registered in 1890, 1902, 1920, 1944, and 1966 The new HST observations also help refine the distance to the star: about 15600 light-years from Earth.

Ivan Adamin