

A NEW VARIABLE STAR IN DELPHINUS

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Özet

Bu çalışma; Glinos, Wallach-Levy ve Levy'nin Delphinus'daki yeni bir değişen yıldız ile ilgili son çalışmasında da gösterildiği gibi, bir değişen yıldızın keşif işlemlerini ortaya koymaktadır.

Abstract

This brief paper highlights the discovery of a new eclipsing variable star in Delphinus, an accomplishment of our comet-and-asteroid search program CN3t. The star, TYC 309.485521, varies more than a full magnitude over 7.3 hours.

1. Background

On April 6, 2004, we began a search for asteroids and comets with a 63.5 cm Ritchey-Chretien telescope and Finger Lakes CCD system. The program, called CN3t, is one portion of a program called CN3 that began in December 1965 and which, over the past 40 years, involves visual, photographic, and electronic searching for comets.

With CN3t, we photograph each selected area of sky three times over the course of a night. We use Bob Denny's Astronomer's Control Program to control the CCD and the telescope. ACP moves the telescope from target to target, and it measures the position of every image using a software component called PinPoint. Once the observing list for the night is prepared, ACP works with the telescope and CCD, photographing each field three times. ACP, in turn, controls MAXIM DL, which operates our camera.

After the session is over, we use Visual PinPoint to scan each trio of photographs. Again this process is automated; it is so that I do not even see the images unless the program has detected what could be an asteroid or comet. Then the three images will blink one after the other, while a cross shows the position of the suspected object.

2. Discovery

In three of our images taken on June 8, 2005, Tom Glinos discovered a variable star in Delphinus. It is TYC 309.485521 at the following position:

(J2000.0) 20:37:56.5 +13:37:53.

Over the course of a night it varies up and down by about a full magnitude in our unfiltered CCD images. The light curve was derived from 1964 data points obtained over 17 evenings between June 8 and July 5, 2005.

While helping determine the nature and history of this star, Elizabeth Waagen of the AAVSO found that the automated Northern Sky Variability Survey had some data on it, but the variation it recorded was only about 1/5 magnitude with a period of 0.6085442 days. Our data show a far greater variation of at least a full magnitude, and a period of 7.3 hours. We suspect that the NSVS data do not differentiate this star from its nearby companion, and hence did not reveal which of two stars is variable.

From our data offered below, it would appear that this star is an eclipsing binary with a period of 7.3 hours.

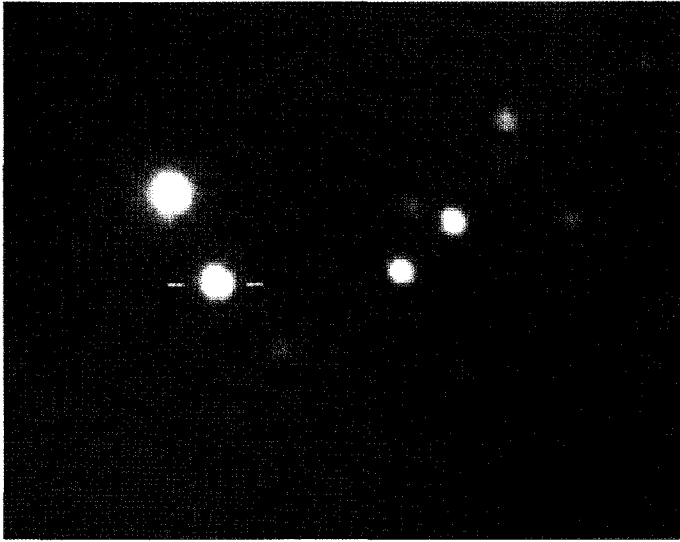


Figure 1: Delphinus variable (TYC 309.485521) at maximum, north up, east to left.

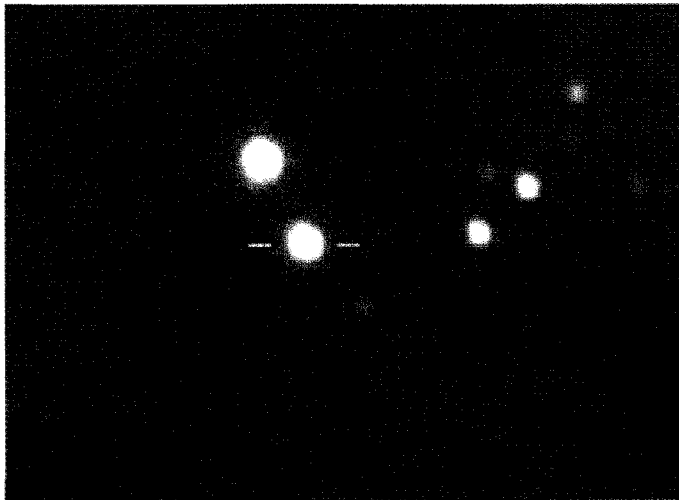


Figure 2: Delphinus variable (TYC 309.485521) at minimum, north up, east to left.

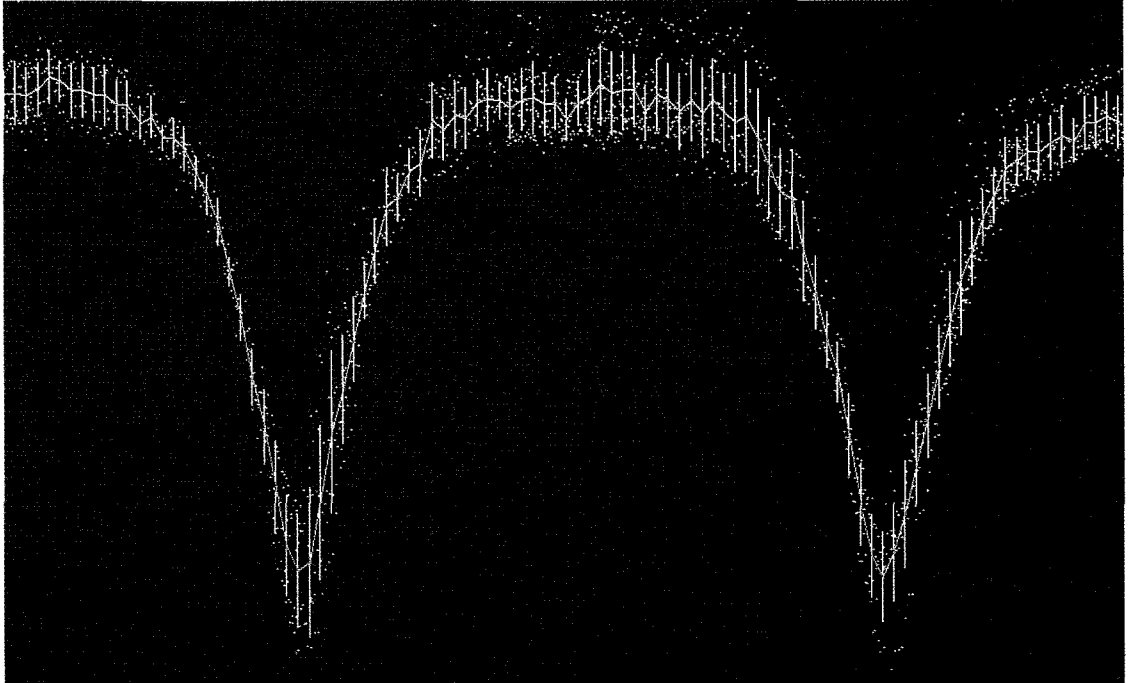


Figure 3. A phase plot diagram of our new variable star in Delphinus. Several nights of data have been combined into this two-cycle diagram. Time is plotted along the X-axis; Magnitude along the Y axis. Maximum magnitude was 12.08 at JD 2453530.8732; minimum 13.26 at JD 2453557.8787.

This paper is being submitted both to the Journal of the AAVSO and to the Proceedings of the Amateur Astronomy Symposium in Istanbul, Turkey, held in memory of Janet Mattei.