

V377 CAS: A POSSIBLY MISCLASSIFIED BINOCULAR VARIABLE STAR

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Abstract

The classification of V377 Cas as a delta Scuti star is questioned in view of the observational evidence. Further observations of this interesting star are needed.

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In the Third Edition of the **General Catalogue of Variable Stars** (Kukarkin *et al.* 1969) (GCVS), the star V377 Cas is listed as a rapid irregular of intermediate spectral class (F0) with a visual magnitude range of 7.8 - 8.3. In the recent Fourth Edition (Kholopov *et al.* 1985), it is listed as a delta Scuti variable with a V magnitude range of 7.78 - 7.83. The notes in this edition add the interesting remarks that V377 Cas is a double star (8^m_5 , 9^m_4 ; 2^s_1) and that two studies of this star indicate constancy and a (visual?) range of 0.26 magnitude, respectively.

Stimulated by the data in the 1969 GCVS, I have made more than 900 observations of this star over the past 15 years, using as comparison stars SAO 021224, 6^m_9 ; (42' WNW); SAO 021277, 7^m_7 (41' SSW, near TV Cas); SAO 021256, 7^m_9 (30' WSW); and SAO 021249, 8^m_2 (30' W). The 1950 position of the variable is $0^h 16^m 31^s$, $+59^\circ 25.6$. The magnitude range of my visual estimates is 7.5 - 8.4, well beyond the uncertainties of the fine sequence, which firmly establishes this star as a variable. The variations are generally slow, over durations of tens of days, with periods of near constancy. No rapid variations (on the order of days) have been noted, with one major exception. Observations on JD 2446757 suggest eclipse-like behavior, with the star at magnitude 7.8 on JD 2446757.524 and apparently recovering from magnitude 8.4 to 8.0 between JD 2446757.63 and 2446757.71.

One obvious conclusion from these data is that this star is in need of further observation. V377 Cas is certainly neither constant nor a delta Scuti star of small amplitude. Clearly, more observations are needed to properly classify it. Are there long-period eclipses or rare rapid variations? Which star is varying? The answers to such questions are within the range of binoculars! Telescopic observations during periods when the star is bright (approximately magnitude 7.8) or faint (approximately magnitude 8.1) when the two components are separable would provide important evidence as to which component of the system is responsible for the observed variations. There are many interesting possibilities.

REFERENCES

- Kholopov, P. N. *et al.* 1985, **General Catalogue of Variable Stars**, Fourth Edition, Moscow.
Kukarkin, B. V. *et al.* 1969, **General Catalogue of Variable Stars**, Third Edition, Moscow.