

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 4279

Konkoly Observatory
Budapest

14 December 1995

HU ISSN 0374 – 0676

THE 1995 OUTBURST OF DV Dra

DV Dra is a dwarf nova discovered during its 1984 outburst by Pavlov and Shugarov (1985). Their inspection of POSS could not show the quiescent counterpart down to 21st mag. This outburst was studied by Wenzel (1991) using Sonneberg plate collection. The combined data showed that the 1984 outburst reached B=15.0, and the object was suggested to be brighter than B=17.3 for at least 28 days. No further outbursts were detected other than the 1984 one. From the shape and long duration of the outburst, low outburst frequency, Wenzel (1991) suggested the classification of DV Dra as a WZ Sge-type dwarf nova (cf. Bailey, 1979; Downes and Margon, 1981). This outburst was further discussed by Richter (1992) on the presence of a “dip” during outburst.

The object was caught probably first time since discovery by Iida on 1995 Oct. 30.398 UT at an unfiltered CCD magnitude of 17.8. Further CCD observations were undertaken by Iida using a 20-cm reflector with an unfiltered ST–6, and at Ouda Station, Kyoto University (for description of instruments cf. Ohtani et al. 1992) using a 60-cm reflector with a CCD camera (Thomson TH 7882, 576 × 384 pixels). For Ouda observations, an interference filter was used which had been designed to reproduce the Johnson V band.

The Ouda frames were first corrected for standard de-biasing and flat fielding, and were then processed by a personal-computer-based PSF photometry package developed by one of the authors (T.K.). The frames by Iida were processed by a similar personal-computer-based photometric program developed by Iida. Differential magnitudes of the variable were determined against a local standard star marked as C1 (Ouda) and C2 (Iida) in Figure 1. The constancy of the comparison was checked against several stars in the same field. From the Ouda frames, we measured the difference between C1 and C2 as 3.55 mag. By comparison with GSC stars, we adopted a magnitude of C1 as 12.5. In Table 1, we list all available magnitudes reduced using these values.

Table 1. List of observations for the 1995 outburst. The abbreviation 'CU' in the 'System' column represents unfiltered CCD magnitudes. Exposure times are given in seconds.

Date (JD)	Mag.	System	Observer	Exposure
2450020.898	17.8	CU	Iida	120
2450020.905	17.5	CU	Iida	120
2450020.911	17.2	CU	Iida	180
2450021.872	17.8::	CU	Iida	120
2450022.894	17.5	CU	Iida	240
2450034.888	18.6	V	Ouda	240
2450046.879	18.6	V	Ouda	360

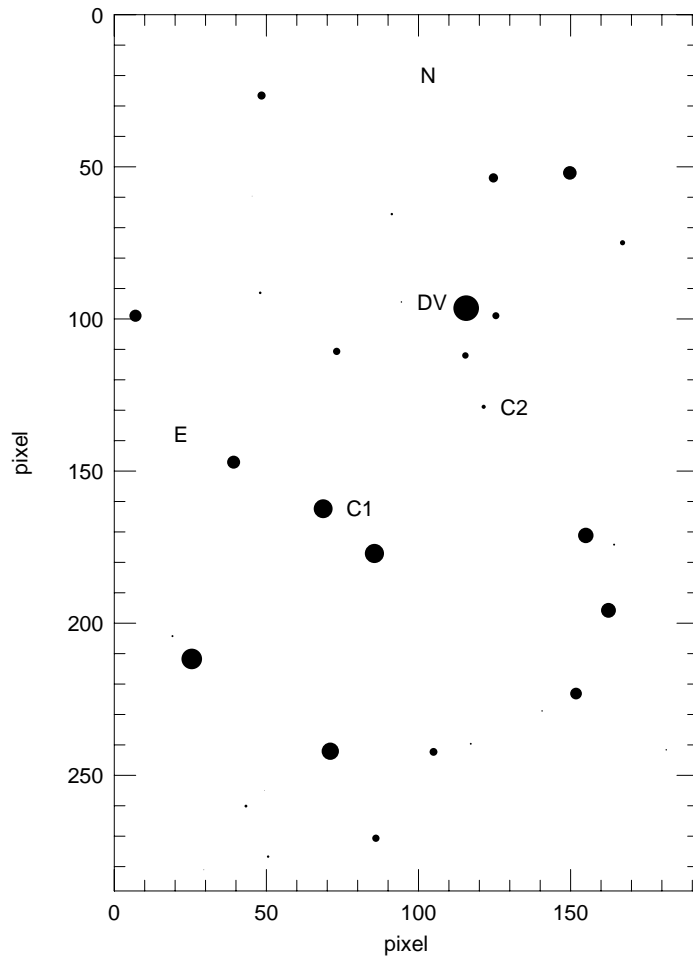


Figure 1. Finding chart of DV Dra drawn from a CCD image. North is up, and the field of view is about 10×7 arcmin. The comparison stars (C1,C2) and DV Dra are marked.

An accurate position was determined from frames taken at Ouda and frames by Iida independently. The Ouda frames gave $18^{\text{h}}17^{\text{m}}24^{\text{s}}.44 + 50^{\circ}48'16''.6$ (J2000.0) based on 5 GSC stars with a mean residual of $0''.3$, and frames by Iida gave end figures of $24^{\text{s}}.44$ and $16''.3$ (with a possible error of $1''.0$). These values are slightly different from those given in Downes and Shara (1993).

The present observations indicate that DV Dra has shown an outburst ~ 2 magnitudes fainter than the 1984 one, but seemingly staying brighter than $V=18.6$, which is at least 2 mag above quiescence reported by Pavlov and Shugarov (1985), for more than 26 days. Assuming the WZ Sge-type nature, the present outburst may represent a faint superoutburst sometimes detected in large-amplitude SU UMa systems like WX Cet, SW UMa, VY Aqr and BC UMa (e.g. see Kato, 1995) rather than a normal outburst.

Part of this work is supported by a Research Fellowship of the Japan Society for the Promotion of Science for Young Scientists.

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