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REDISCOVERY OF A DWARF NOVA, V725 AQUILAE

V725 Aql is listed as a dwarf nova by Vogt and Bateson (1982), who identified a blue star on the Palomar Observatory Sky Survey plate. However, Bruch (1983) pointed out the lack of ultraviolet excess in this star.

During the course of our systematic survey of dwarf novae at the Ouda Station, Kyoto University, we found a “new” bright object in the vicinity of the cataloged position of V725 Aql on March 8, 1995, and have made photometric observations of this object on 8 nights between March 8 and March 20 and on May 6.

All of our observations at the Ouda Station were done using CCD camera (Thomson, TH7882 CDA, 576×384 pixels with $23 \mu\text{m}$ square pixel size) attached to the Cassegrain focus of 0.6-m reflector with Johnson V-band filter (Ohtani et al. 1992). The integration time was between 90 and 120 s depending on the brightness of the object. The mode of 2×2 on-chip summation was employed. We reduced the data with the personal-computer-based PSF photometry package developed by one of the authors (T.K.). This package automatically subtracts bias-frames, applies flat fielding and enables us to estimate the differential magnitudes.

The accurate position of this object calculated using our CCD image is $19^{\text{h}}56^{\text{m}}45^{\text{s}}.03 + 10^{\circ}49'32''.7$ (J2000.0) (± 0.5 arcsec) using seven GSC stars. This position significantly differs from that in Vogt and Bateson (1982). However, on close examination of the discovery paper (Rohlf 1949) and the original finding chart (Hoffmeister 1957), although the chart was small in scale, the object currently in outburst seems to be within the error of these papers. Figure 1 shows the chart based on our CCD image. At the corresponding position in the CV chart by Downes & Shara (1993), there is a very faint star.

Figure 2 shows the results of the differential photometry from March 8 to 20. The V magnitude of the comparison star is 11.9 (GSC) and the position is $19^{\text{h}}56^{\text{m}}50^{\text{s}}.88 + 10^{\circ}46'12''.1$ (J2000.0). The average magnitudes on March 8 and on May 6 correspond to 13.6 and 17.3, respectively.

Rohlf (1949) found three outbursts separated by about 1300 days. Fuhrmeister (1991) surveyed 250 Sonneberg plate and found two additional outbursts. These data seem to suggest a low outburst frequency of this object. However, no information on identification was given. Hazen (1995) tells that she has looked at 264 plates of the region in the Harvard College Observatory plate archive and has found 4 additional historical outbursts. She also tells that the position is not consistent with the chart of Vogt and Bateson (1982) but seems to be consistent with the position mentioned above.

All the facts above give good observational evidence that the object we observed is the “real” V725 Aql, only despite the range of variability (13.7–16.2) (Rohlf 1949) which seems to be in contradiction with the new finding. The problem of the lack of ultraviolet excess claimed by Bruch (1983) seems to be solved now.

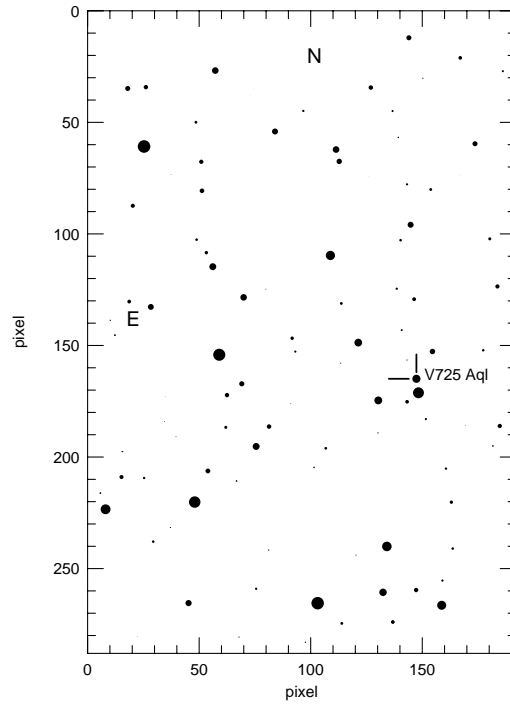


Figure 1: Chart of V725 Aql based on a CCD image

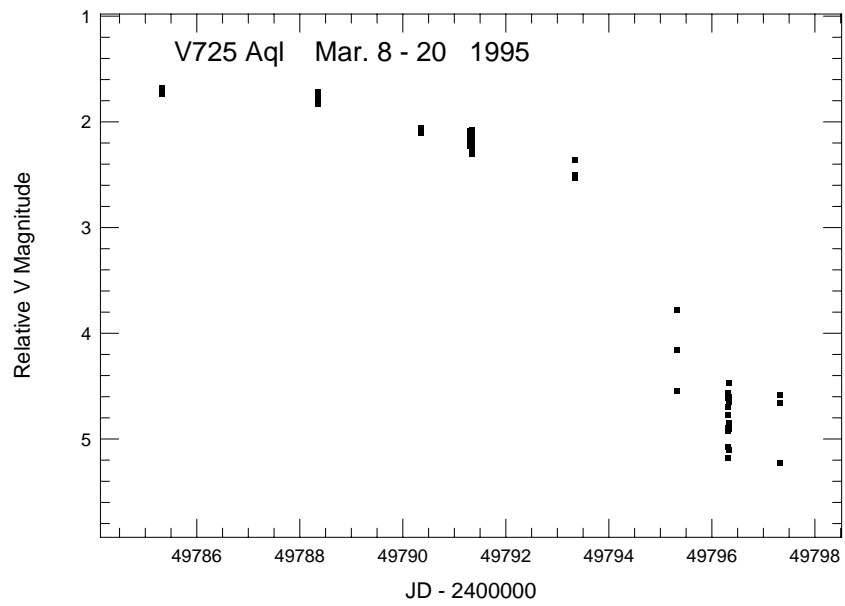


Figure 2: Outburst light curve on March 8 – 20, 1995

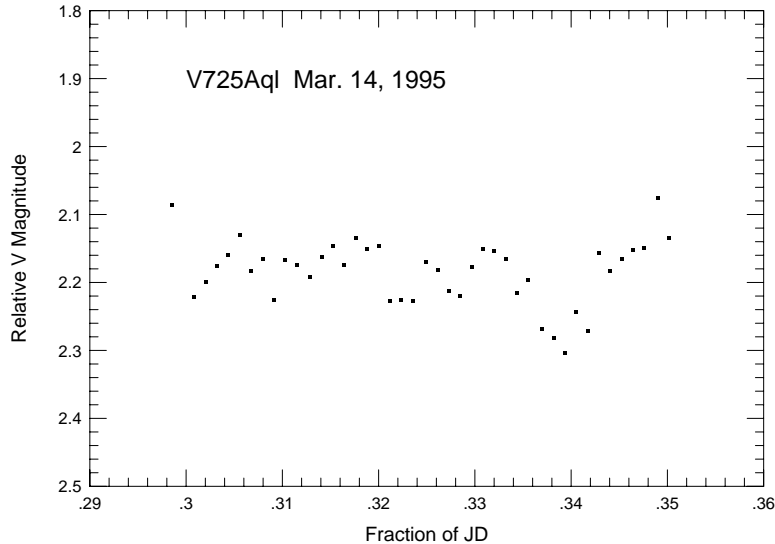


Figure 3: Short-term variation of V725 Aql

Figure 3 seems to show short-term variability during outburst. However, due to the shortness (~ 1 hours) of the observational time at the Ouda Station, we could not confirm any periodicity. It is left unclear what subtype of dwarf novae V725 Aql belongs to. However, a long outburst recurrence time, a rather large outburst amplitude and a rapid decline rate ($\sim 0.8 \text{ mag day}^{-1}$) from outburst imply that V725 Aql may be either an infrequently outbursting SS Cyg-type star or an SU UMa-type star which is currently caught during a superoutburst. The determination of the orbital period and the close monitoring for future outburst are highly encouraged.

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