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ACTIVE AND INACTIVE STATES OF THE X- RAY BINARY 4U 2129+47 = V 1727 CYGNI

From a letter of W. Pietsch, Institut für extraterrestrische Physik of Max-Planck-Institut für Physik und Astrophysik, Garching/München, we learned that V 1727 Cyg was observed in a low state in September and October 1983 in the optical and x-ray regions - see also the announcement of Pietsch et al. in IAU Circ. 3887. Although the object's brightness is rather close to the plate limit even of our best astrographic exposures (two 40 cm four-lens cameras) I tried to look for further inactive phases, with the following results: V 1727 Cyg is strongly variable between  $16^{\text{m}}.8$  and  $18^{\text{m}}.1$  (B) on 75 plates taken in 1963, 1967, 1969, 1970, and (scattered) 1972 to 1979, the last definitely bright observation ( $16^{\text{m}}.7$ ) being of 1979 Oct. 11. Figure 1 shows the

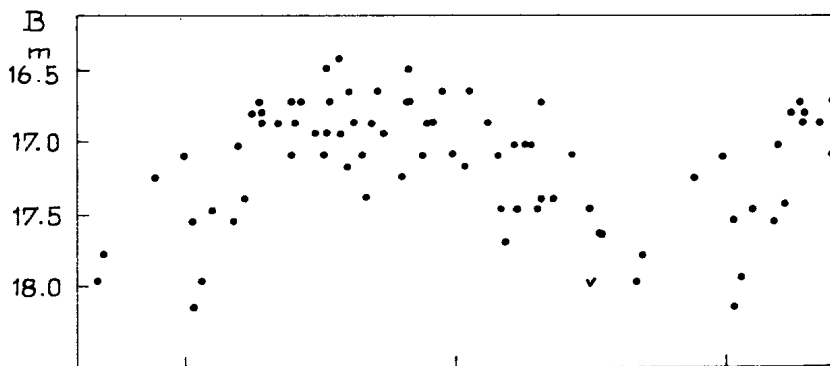


Figure 1

estimates, folded by means of the elements

$$\text{Min. (hel.)} = 244\,4403.743 + 0^{\text{d}}.2182579 (+ 0.0000008) \cdot E$$

given by McClintock et al. (Astrophys.J. 258, 245, 1982).

In contrast to that behaviour the star was obviously in inactive faint

states on 39 plates of 1938 to 1943 and 1983. After the active time described above the first exposure showing the object faint ( $>17.8^m$ ), when it should have been around  $17.0^m$  according to the elements, is of 1983 Sep . 7. Figure 2

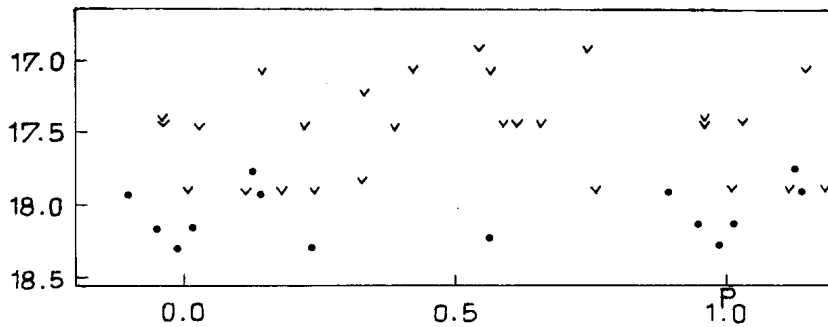


Figure 2

displays the observations of 1938 to 1943. The arrows indicate "fainter than" observations, period as before, zero point arbitrary.

Unfortunately, 7 plates of 1980, 1982 and August 1983 do not definitely contradict either of the two possibilities.

One should note that the light curve of Figure 1 is strongly flattened because of the occasionally rather long exposure times (up to  $1/3 P$ ). The asymmetric trend, which has been described by previous authors, is however well seen. The large scatter is also due to the faintness of the star.

The comparison stars used in this investigation can be located on the finding charts of Thorstensen et al. (Astrophys.J. 233, L 57, 1979) as follows; the positions are relative to the variable in millimetres, and the adopted B magnitudes are given in parantheses:

a 3.5 sf ( $16.5^m$ ), b 14.8 n, 4.5 f ( $17.5^m$ ), c 4.3 p ( $17.9^m$ ).

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