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**IO DELPHINI – CLOSELY RELATED TO WZ SAGITTAE?**

IO Del was discovered by Richter (1970) as a probable U Geminorum star. Subsequently many new plates were taken and the object could now be observed on 212 plates of the Sonneberg 400/1600mm and 400/2000mm astrographs with plate limits of about 17<sup>m</sup>...18<sup>m</sup> and on 160 plates of the 170/1400mm astrograph with plate limits of about 16<sup>m</sup>...17<sup>m</sup>. The distribution over the years is uneven. In Table 1 the first columns give the years, the second and third columns the numbers of plates of the 400mm and 170mm astrographs, respectively.

The 1966 eruption published by Richter (1970) could be confirmed. In addition, on two plates taken in 1940 Aug. 2 and Aug. 3 there appear to be, scarcely visible and possibly even simulated by plate faults, traces of the object very close to the plate limit. If the traces are real, we may interpret the object as a dwarf nova with a cycle length of 26/n years, where n is a very small integer.

Table 2 gives the outburst observations and Figure 1 the 1966 light-curve.

Invisible on the Palomar Sky Atlas; minimum brightness fainter than 20<sup>m</sup>.

Unfortunately neither the rise to maximum nor the maximum itself were observed. Interestingly, during the decline the observations settle down on a plateau of about 17<sup>m</sup>.3.

Table 1. Distribution of plate numbers over the years (see the text)

|      |    |    |      |   |    |      |    |    |      |    |   |
|------|----|----|------|---|----|------|----|----|------|----|---|
| 1928 | 0  | 2  | 1944 | 0 | 0  | 1960 | 3  | 7  | 1977 | 1  | 0 |
| 1929 | 0  | 27 | 1945 | 0 | 0  | 1961 | 0  | 2  | 1978 | 2  | 0 |
| 1930 | 0  | 9  | 1946 | 0 | 0  | 1962 | 0  | 12 | 1979 | 3  | 0 |
| 1931 | 0  | 13 | 1947 | 0 | 0  | 1963 | 31 | 0  | 1980 | 0  | 0 |
| 1932 | 0  | 5  | 1948 | 0 | 1  | 1964 | 3  | 4  | 1981 | 1  | 0 |
| 1933 | 0  | 6  | 1949 | 0 | 3  | 1965 | 3  | 2  | 1982 | 1  | 0 |
| 1934 | 0  | 10 | 1950 | 0 | 3  | 1966 | 6  | 3  | 1983 | 8  | 0 |
| 1935 | 0  | 3  | 1951 | 0 | 0  | 1967 | 3  | 3  | 1984 | 2  | 0 |
| 1936 | 0  | 0  | 1952 | 0 | 0  | 1968 | 4  | 2  | 1985 | 5  | 0 |
| 1937 | 0  | 0  | 1953 | 0 | 2  | 1969 | 16 | 0  | 1986 | 9  | 0 |
| 1938 | 0  | 0  | 1954 | 0 | 4  | 1970 | 0  | 0  | 1987 | 0  | 0 |
| 1939 | 0  | 0  | 1955 | 0 | 15 | 1971 | 0  | 0  | 1988 | 13 | 0 |
| 1940 | 22 | 0  | 1956 | 0 | 4  | 1972 | 0  | 0  | 1989 | 8  | 0 |
| 1941 | 0  | 0  | 1957 | 0 | 4  | 1973 | 6  | 0  | 1990 | 9  | 0 |
| 1942 | 29 | 0  | 1958 | 0 | 8  | 1974 | 1  | 0  | 1991 | 3  | 0 |
| 1943 | 0  | 0  | 1959 | 0 | 6  | 1975 | 4  | 0  | 1992 | 11 | 0 |
|      |    |    |      |   |    | 1976 | 1  | 0  | 1993 | 4  | 0 |

Table 2. The probable 1940 and the 1966 outbursts

| J.D.         | $m_{pg}$   | J.D.         | $m_{pg}$         |
|--------------|------------|--------------|------------------|
| 2429 791.482 | [17.5      | 2439 349.479 | [17              |
| 844.499      | [17        | 378.413      | 16.2             |
| 844.526      | 18.1: :(?) | 378.486      | 16.1             |
| 845.497      | 18.2: :(?) | 380.364      | 16.8:            |
|              |            | 380.412      | 17.0             |
|              |            | 381.365      | 16.9             |
|              |            | 385.447      | 17.3             |
|              |            | 388.346      | 17.3             |
|              |            | 406.293      | {16?(plate def.) |
|              |            | 683.507      | {17.5            |

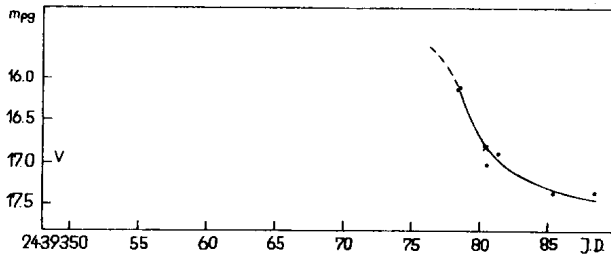


Figure 1. The 1966 outburst of IO Delphini

Such a plateau is a characteristic feature of SU Ursae Maioris stars shortly before the final decline. In very long-cyclic objects of cycle length  $>1$  year, which are often called WZ Sagittae stars, this plateau drops off about 19...25 days after and down to 2...3 mag below brightness maximum (UZ Boo, WX Cet, AL Com, DV Dra, V592 Her, and WZ Sge, see Figures 2-7 in Richter, 1992). If this interpretation is correct, the brightness maximum of IO Del should have occurred between about J.D.2439365 and J.D.2439370 at a maximum brightness of about  $14^m5... 15^m$ . With a characteristic amplitude of about 8...9 mag the minimum light should be expected at magnitude of  $23^m \pm 1^m$ .

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