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MORE ABOUT FY Aql AND GRBS 790331

There are usually no variable optical candidates in the error boxes of gamma-ray burst sources (GRBS). One exception is the variable star FY Aql lying inside the box of GRBS 790331 and having been previously catalogued as a Mira variable with a period of 208 days (Ahnert-Rohlfs and Götz, 1954).

On the other hand, Laros et al. (1985) have discussed the possibility that FY Aql may in fact be a dwarf nova. More recently, spectrophotometric data published by Hartmann and Pogge (1987) suggest the variable is of M4e III spectral type and thus support the previous classification of FY Aql as a Mira variable star.

In order to get also more detailed photometric data, the object was measured on more than 400 astrographic plates taken at the Sonneberg Observatory of the Central Institute for Astrophysics of the Academy of Sciences of GDR and covering the time interval 1928-1985. Because FY Aql represents one component of an apparent double, the integral brightness of both components was estimated and then the brightness of FY Aql was calculated using the measured magnitude of the other component according to Hartmann and Pogge (1987).

Our photometric data confirm the classification of FY Aql as a Mira type variable. Preliminary results of our investigation are:

1. The mean period over the time interval investigated is 209.7 d with elements
Maximum = $244\ 5155 + 209^{\text{d}}.7 \times E$
2. The mean amplitude of light changes is nearly 1.7^{m} in B (both components) or $\geq 3^{\text{m}}$ in B (FY Aql only).
3. The shape of maximum is symmetric and narrower or equal than that of minimum indicating the variable is of a subtype β_1 or β_2 according to the classification by Ludendorff (1928).
4. The typical duration of maximum (brightening) of the integral (both components) light curve is ~ 100 days.

We conclude that FY Aql is indeed a Mira type variable, the estimated period being fully consistent with the period-spectrum relation of Mira stars according to Keenan (1966). More details will be published elsewhere (Hudec, 1988).

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