

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1797

Konkoly Observatory
Budapest
1980 May 30

GLIESE 83.3: NOT A RED DWARF, BUT AN UNUSUAL VARIABLE NEVERTHELESS

Quite recently Oláh (1980) reported photoelectric photometry of the red star Gliese 83.3 (= BD + 61° 366 = HD 12208) which showed a roughly sinusoidal light curve with an amplitude of $0^m.12$ in B and V, with period $P = 2^d.825$. On the basis of its photometric characteristics and its inclusion in Gliese's catalogue of nearby stars, Oláh claimed the star was a BY Draconis variable. The spectral type (from an objective prism plate) given in Gliese's catalog is dK5, though no trigonometric parallax has been measured for this star.

It is the purpose of this note to point out that Gliese 83.3 is not a dwarf at all, but rather a giant of type M3-4. The variability of this star then becomes more of a puzzle.

Petit (1976) had suggested that Gliese 83.3 might be a likely BY Dra star, and in 1976 we obtained several spectra (dispersion 40 \AA/mm) of the red region specifically to search for $H\alpha$ emission, a common characteristic of BY Dra stars. Our spectrograms of Gliese 83.3 show nothing resembling a K-M dwarf - the TiO bandheads are very strong and no $H\alpha$ emission is present. Our spectra are a close match to that of HR 3319, of spectral type M3 III, or perhaps a shade later. The spectral type for Gliese 83.3 is then M3-4 III. No other peculiarities are visible in the red. Apparently the previous spectral type is in error. We note also that the proper motion of this star given in the SAO catalogue is quite small [$\mu(\alpha) = -0^s.0002$, $\mu(\delta) = +0^s.002$], in accord with a giant classification.

However, anomalies still remain. The photometric variability is rather difficult to understand; irregular or semi-regular variability should take place on a much longer time-scale than the 2.^d8 period Ołáh reports. The (B-V) color of +1.70 is about a tenth of a magnitude redder than we might expect for a giant of this spectral type. Further photometry of this star is clearly in order.

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