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THE VARIABILITY OF BD +40°5040

In the course of photoelectric photometry of comparison stars on the AAVSO chart for TY Andromedae (AAVSO 1942), one of us (B.A.S.) noted that the star marked 9.2 visual magnitude was 0.4 magnitude fainter than indicated, which was about twice the usual error for the other measured stars in this comparison sequence. More significantly, the star was unusually red, +2.12 B-V.

This star is BD +40°5040 - AGK +40°2437, spectral type M8 (AGK3, 1975). Espin (1895) first noted the strongly banded spectrum with a visual spectroscope and included this star in his list as Espin 1051. It has also been catalogued as a double star, ADS 16659.

BD +40°5040 is not included in the General Catalogue of Variable Stars (Kholopov et al. 1985), the subsequent Name Lists of Variable Stars (Kholopov et al. 1985, 1987, 1989; Kazarovets and Samus 1990), or the New Catalogue of Suspected Variable Stars (Kholopov et al. 1982). However, a star of this type is likely to be variable, so D.B.W. estimated its magnitude on 76 Harvard Observatory patrol plates of the Damon blue series spanning the interval 1975 to 1989. Comparison stars with photoelectric B magnitudes were used.

Light variations were found over the range 10.5-11.2 ptg, with observations near maximum or minimum recurring at intervals less than about 100 days. A Discrete Fourier Transform analysis found a weak frequency peak equivalent to the period 72.4 days. We conclude that BD +40°5040 is a semiregular variable with a range of 0^m.7 ptg and a characteristic cycle length of about 72 days.

Some of the information in this report was obtained from SIMBAD, database of the Strasbourg, France, Astronomical Data Center. D.B.W. wishes to thank Dr. Martha Hazen for the opportunity to use the Harvard plate collection for this and other variable star investigations.

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