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HR 2146 A NEW VARIABLE IN AURIGA

Photometric photometry of HR 2146 = SAO 077958 = HD 41429 obtained January 14 to April 13, 1991 in VBRI wavelengths indicates a period of 32.5 days between maxima (Figure 1). 27 Data points in VB taken over 102 days were used in a Data-Compensated-Discrete Fourier Transform program (Belserene, 1986) to determine a period of 32.896 days. Two discernible cycles of maximum light show the period to remain constant while the amplitude fluctuates from 0.112 - 0.064 in V and from 0.088 - 0.069 in B.

The General Catalogue of Variable Stars (Kholopov et al. 1985), the New Catalogue of Suspected Variable Stars (Kholopov et al. 1982) and the 67th, 68th, 69th and 70th Name-List of Variable Stars (Kholopov et al., 1985, 1987, 1989, 1990) do not list HR 2146 as a variable. HR 2146 along with HR 8062 (Snyder, 1990) was selected as a potential variable because the spectrum is similar to those of known variables of mainly small amplitude (Hoffleit, 1979).

HR2146 is listed as 6.08 V, B-V = 1.68, spectral type M3II (Buscombe, 1962) with a dwarf companion F7V, 10.72V at a separation of 10.0" (Hoffleit and Jaschek, 1982). With the luminosity classification of a bright giant HR 2146 is a Small Amplitude Red Variable (SARV) having an amplitude < 0.2 m and p = 20 - 40 days (Eggen, 1972a,b, 1973). HR 2146 color variations are $0.12 \pm .01$ in V-R and $0.07 \pm .01$ in V-I which is typical of small amplitude red variables. R-I of 1.6 is redder than the boundary of the classical red variables (R-I ~ 1.0) where light variations tend to be more erratic. Total radiant luminosity, bolometric magnitude = 4.37 and a color temperature of 3200K. Maximum rise is more rapid than minimum decline and amplitudes at longer wavelength are progressively more depressed due to the TiO absorption enhancing the V amplitude more than BR and I (Figure 1).

Observations were made with an Optec SSP-3 photometer using the 0.56m telescope at MacLean Observatory and the 0.25m reflector at Tahoe Observatory. Comparison star = HD 41430, K3III, 7.51 V, B-V = 1.24, and Check star = HD 41398, B2Ib, 7.46 V, B-V = 0.32 (Figure 2). Magnitudes were corrected for extinction and transformed to the standard Johnson BV system.

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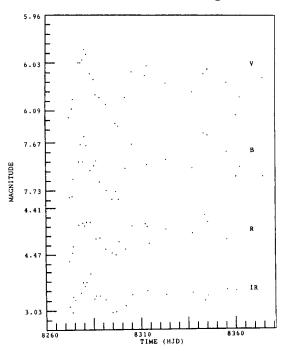


Figure 2.

Figure 2. V- HR 2146

C- Comparison
K- Check

Figure 1. VBRI Color Curves of HR 2146

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