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HD 8152 - A NEW W URSAE MAJORIS TYPE ECLIPSING BINARY

While making observations of the X-ray star HD 8357 for detecting any RS CVn type light variations in the optical region, it was found that the star HD 8152 used as a check star, showed light variations. Subsequently HD 8152 was observed photoelectrically on thirteen nights during 1980-81. The observations were made with the 48-inch telescope of the Japal-Rangapur Observatory, through the standard U,B and V filters. An unrefrigerated EMI 6256 B photomultiplier was used, the output of which was fed to a GR 1230A D.C. amplifier and a Honeywell-Brown strip chart recorder. Stars HD 8523 and HD 8171 were used as comparison and check stars respectively. All the observations were reduced to outside the atmosphere by applying nightly extinction coefficients for each filter determined from the observations of the comparison star. The differences Δm (variable - comparison) were then transformed to the Johnson and Morgan's standard UBV system using the transformation relations obtained from the observations of the UBV standard stars.

The observed magnitude differences Δm (check - comparison) on different nights show for a single observation a standard deviation of $\pm 0^m.02$ in V, $\pm 0^m.01$ in B, and $\pm 0^m.02$ in U. This indicates that the comparison and check stars remained constant during the period of our observation within the above limits.

The observations of all the 13 nights were analysed by the method of Marraco and Muzzio (1980) for a period determination. From this analysis the Ephemeris of the variable is found to be HJD of Primary Minimum = $2444562.4691 + 0.47564 E$.

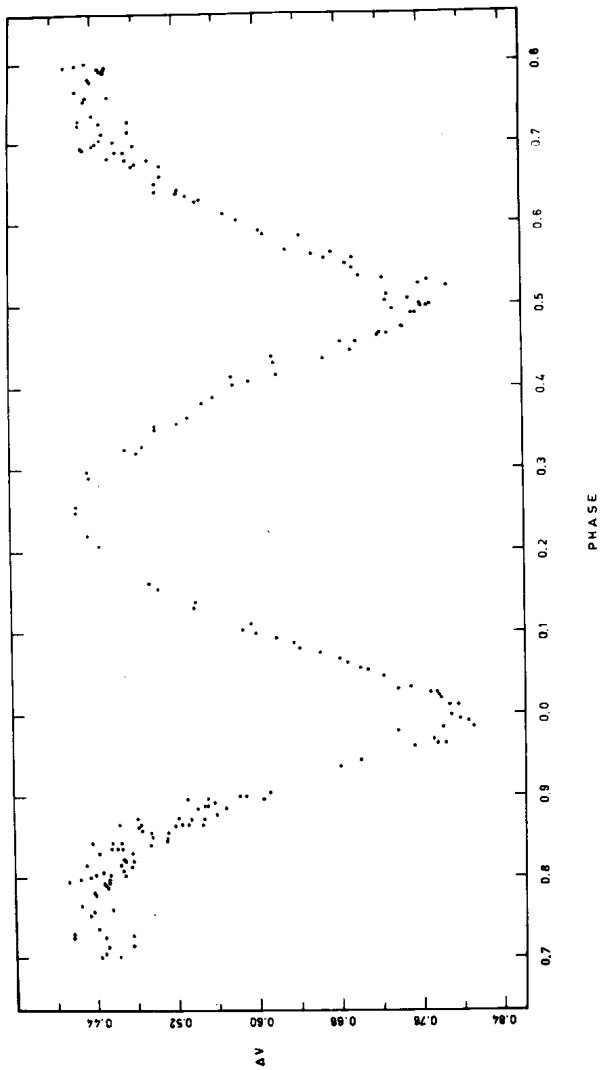


Fig. 1: HD 8152 - OBSERVED LIGHT CURVE IN YELLOW

Figure 1

The light curve in yellow, computed with this Ephemeris is shown in Figure 1. This shows the nearly equal depths of primary and secondary minima and the continuous light variation outside

the eclipses, characteristic of the W Ursae Majoris type eclipsing binaries. The magnitudes and depths in the various colours are found as:

	V	B	U
Magnitude at Maximum	8 ^m .60	9 ^m .10	9 ^m .10
Depth of Primary Minimum	0 ^m .364	0 ^m .376	0 ^m .392
Depth of Secondary Minimum	0 ^m .330	0 ^m .360	0 ^m .359

From the (B-V) colour of + 0^m.5 and (U-B) colour of + 0^m.0 at maximum light, the combined spectral type of the system is found to be F8V (Allen 1976). This is within the range of spectral types of other known W Ursae Majoris stars.

Photometric and spectroscopic observations of the new variable are in progress to obtain the elements.

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