THE HARVARD DESIGNATION OF VARIABLE STARS

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Abstract

The Harvard Designation is explained and illustrated.

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In the late 1800's and early 1900's, Harvard College Observatory was the center of most variable star work. Director Edward C. Pickering encouraged both photographic and visual observations. Several catalogues of variable stars were published by the Observatory, and the number of known variables grew so large that astronomers felt the need for a designation that would give a better clue to location in the sky, rather than just a list by constellations. The result was the Harvard Designation, described in the Harvard Observatory Annals, vol. 48, p. 93, 1903.

Many suggestions were considered, and it was finally decided to use six numbers to indicate Right Ascension and Declination, epoch 1900. This method is not intended to give an accurate position. It is, as Webster's Dictionary says, an "indication." There has been some confusion concerning the method of determining the designation.

Suppose the position of a variable is given by Right Ascension in hours, minutes, and seconds of time and by Declination in degrees, minutes and tenths of arc, epoch 1900. The first step in determining the Harvard designation is to reduce the Right Ascension to hours, minutes, and tenths, and the Declination to degrees and whole minutes of arc. Then drop the tenths of Right Ascension and the minutes of Declination. The remaining six figures make up the Harvard Designation.

For southern variables, a minus sign is inserted before the degrees of Declination, or the degrees may be underscored or italicized.

Ambiguous cases are covered by a special rule. If, for example, the Right Ascension ends with 21 seconds, dividing by 60, to get tenths of minutes will give 0.35. In such cases, adopt the nearest even number, 0.4 in this case. As further examples, 51 seconds would give 8 tenths, and 57 seconds would give 0 tenths of the next higher minute. In the reduction of Declination, the critical case comes at 59 minutes. If the tenths are 5 or more, change the last two figures of the Designation to the next higher degree.

EXAMPLES

	Coordinates (1900)		Reduced		Desig.
RR And	$00^h45^m57^s$	+33°50'.0	$00^h46^m.0$	+33°50'	004633
SU And	23 59 28	+42 59.7	23 59.5	+43 00	235943
TW Aqr	20 58 55	-02 26.5	20 58.9	-02 26	2058-02
				or	205802
U Aur	05 35 38	+31 59.4	05 35.6	+31 59	053531

An easy way to remember the rule is that if the Right Ascension is 57 seconds or more, the minutes would be increased by one; if less, the minutes would not change. In Declination, if the minutes are 59!5 or more, the Declination would increase 1°, if less, the Declination remains the same.