

is it currently possible to study period and light curve changes over an observational span exceeding, in many cases, the age of the AAVSO. Such changes, especially for the Mira stars, can be properly interpreted theoretically only when a very long time base of observations has become available. The value of the older observations continues to increase as newer observations are being added.

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SOME THOUGHTS ON THE ANALYSIS AND INTERPRETATION OF LIGHT CURVES, PART II: PERIODICITIES

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Abstract

Part I of this series showed the consequences of the fact that magnitudes are logarithmic quantities. In this contribution the question of variable star periods is discussed, in particular the cases where multiple periods and/or period changes are present.

The O-C diagram can be a powerful tool for determining periods, period changes, and even the presence of multiple periods. Some superficially similar light curves can easily be distinguished by comparison of their O-C diagrams: examples include "AM" vs. "FM" modulation.

Fourier analysis is the classic method for establishing the presence of periodicities. This method is powerful, but has the drawback that if the light curve is not strictly sinusoidal, the Fourier results will include extra periods to account for the shape of the light curve. Here, the results may depend on whether the magnitude variation or the flux variation is analysed.

Recently a number of relatively straightforward techniques for determining the periods present in a varying source have become popular among astronomers. These techniques include "phase dispersion minimization" and "auto-correlation." The basic assumptions of these techniques are described, examples shown, and further references given.

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