

no noticeable change in the size or shape of the light curve.

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#### SOME CHARACTERISTICS OF VARIABLE STARS APPEARING IN INFRARED SKY SURVEYS

by

EDWIN B. WESTON  
 Optical Physics Laboratory  
 Air Force Cambridge Research Laboratories  
 Bedford, MA 01731

#### ABSTRACT

Variable and suspected variable stars are relatively numerous in infrared sky surveys carried out at wavelengths of 2.2, 4, 11, and 20 microns. Most of these variables are of Mira, semi-regular, and slowly varying irregular types with late (i.e., cool) spectral classes and with giant or supergiant characteristics. Eclipsing variables are represented, but most of them are of long period with  $\zeta$  Aurigae or VV Cephei characteristics. Orbital data for these and a number of other spectroscopic binaries indicate that they are more massive than the average star. Other variables represent an assortment of the remaining types, and they appear to represent the brightest members of those classes or to be especially peculiar.

It is suggested that the observed infrared variability of Mira stars, typically with amplitudes of 0.5 to 1.0 magnitude and approximately in phase with the visual light curve, results primarily from changes in the temperature of circumstellar dust rings or shells as a consequence of variations in the heating by activity centers in the star's atmosphere not too dissimilar from the sun's plage areas characterized by sunspots, flares, etc. The aspect angle at which we view these presumably rotating stars may also be important, since the activity centers will be nearer their equators than to their poles, and perhaps may be the cause of differences in light curve and spectroscopic characteristics separating certain of the semi-regular variables from the Mira stars.

The assistance of the AAVSO provided in the form of preliminary visual light curves for a number of long period variables is acknowledged with appreciation.