RADIAL VELOCITIES OF CLASSICAL CEPHEIDS

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Approximately 2000 radial velocities of 88 classical Cepheids have been observed using a photoelectric radial velocity meter. During the same time interval, these same Cepheids were intensively observed in the BVRI bandpasses, as reported elsewhere in these proceedings. This provides a homogeneous set of phase-locked radial velocity and photometric data which are useful in several contexts. We present here a sample of these results which will be published in their entirety elsewhere.

Introduction

One of the most important uses of Cepheid radial velocity data is in application to the determination of linear radii and distances. These studies require excellent phase-locking between the radial velocity data and the photometric data (Fernie & Hube 1967). We have attempted to achieve this for 88 of the Cepheids contained in the recent BVRI photometric study of Moffett & Barnes (1984).

Observations

From the 112 variables in the Moffett & Barnes (1984) study, we selected 88 which were brighter than 10.7 mag. at minimum for the radial velocity study. The number of observations for each was determined by the quality of existing radial velocity data. In many cases only a few new velocities were needed to bring an excellent, but old, velocity curve into phase with our photometry.

The observations were acquired with a photoelectric radial velocity meter on the coudé spectrograph of the 2.1m telescope at McDonald Observatory (Slovak et al. 1979). All observations were made during the same six year period over which the photometric data were taken.

Results

The velocities for the brightest 22 Cepheids in our program have now been merged with existing radial velocity data. The older data were shifted in radial velocity and in phase until they matched our observations. A mean curve was then drawn by eye through the combined data. Figure 1 shows a sample result of this process. (Following

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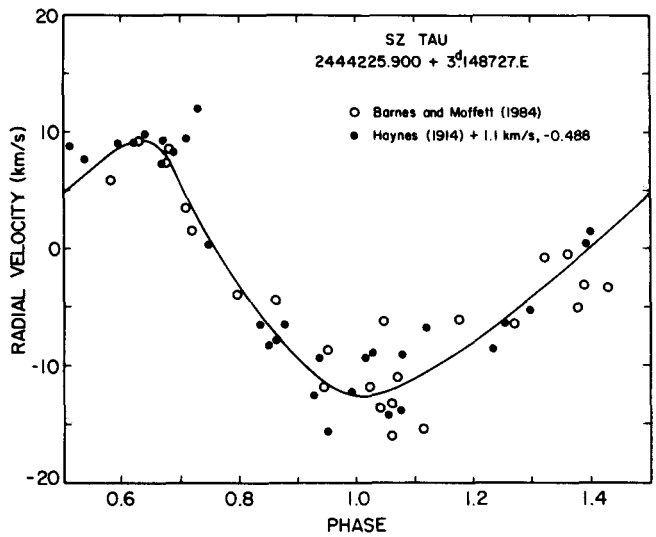
the citation to the reference, we show the corrections in radial velocity and in phase that were applied.)

The uncertainties in our results can be determined from the scatter about the mean curve. For SZ Tau this is $\pm$ 2.6 km S^{-1}, which is typical.

Figure 1. Radial Velocities for SZ Tau



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