

# CCD Photometry of Faint Cepheids

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## Abstract

The parameters and output products of a cepheid survey are presented.

A faint cepheid survey was begun seven years ago as a follow-on to the survey by Henden (1979,1980). The new survey studies those northern hemisphere cepheids fainter than  $V=12$ , with periods shorter than 5 days, and with little or no existing UBV photometry. The goals of the survey are: to complete a statistical sample; to generate uniform finding charts and comparison stars for each variable; to look for anomalies in periods and amplitudes; and to improve periods, epochs and coordinates for all variables.

Approximately 120 stars are included in the survey. These have now been observed using various CCD systems and telescopes, with at least four carefully chosen BVRI data points for each star. An attempt has been made to obtain data at pulsation phases 0.0, 0.25, 0.50 and 0.75 over consecutive cycles. Approximately 2000 BVRI data sets from 60 nights are contained in the survey. The initial paper highlights 36 stars for which sufficient published photometric data exists to permit a comparison. Berdnikov (1986,1987) has been especially active in performing a parallel survey with BVR photoelectric photometry, and our data sets are consistent after his R data has been transformed into the standard system.

The finding charts were generated from deep V CCD frames, and have a scale of 0.8 arcsec/pixel with a field width of 4 arcmin. The J2000.0 coordinates of all identified stars were obtained from the HST Guide Star Catalog. Periods were improved either using a theta-minimization program or by fitting Fourier coefficients. Photometry was taken in Johnson BV and Kron-Cousins RI, with calibration through the use of Landolt and KPNO VCAM standards. Light curves for all stars are given.

The first 36 survey stars show no major deviation from classical light curves. The periods for five of the stars (V526 Aql, HK Cas, V1033 Cyg, V1046 Cyg, and DW Per) have been improved. An earlier finding chart for IN Aur is in error. Of the remaining survey stars, about 60 have well-determined periods and will be examined next. The remainder have poor periods or have been classified as questionable cepheids and will be published last.

## References:

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