LIGHT-CURVE PARAMETERS OF NORTHERN GALACTIC CEPHEIDS

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Abstract. The BVRI light-curve parameters of 112 galactic Cepheids are determined by Fourier analysis using over 4,000 differential photoelectric observations. This catalog is similar to Schaltenbrand and Tammann's except that it is based on a homogeneous data set and the Fourier coefficients are given.

Moffett and Barnes (1984) have obtained over 4,000 differentially determined photoelectric BVRI observations of 112 Cepheids accessible from northern hemisphere observatories. In order to make these data convenient for Cepheid research, we have produced a catalog giving the light-curve parameters for these stars. The format and techniques used to generate this catalog are similar to those employed by Schaltenbrand and Tamann (1971).

The observed light curves were fitted, by least squares, to a Fourier series of the form

$$A_o + A_j \cos [j\omega t + F_j]$$

where, $\omega = 2\pi/P$, t = (HJD of observation - epoch), and j is the order of the series. The fitting program is identical to the one used by Simon and Lee (1981).

The procedure was to try various orders, 2nd to 8th, until a resonably good fit to the observed points was found. The order found for the V-mag light curve was adopted for all other magnitude and intensity fits. Separate orders were determined for each of the color indices. In a few cases, even an 8th order series did not fully represent the observed light curve. The adopted epoch was determined from the Fourier series of the V-mag light curve. Phase zero was defined as the maximum of the V-mag series. Table 1 shows a sample entry in the catalog which will be published in the Astrophysical Journal Supplement Series.

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Table 1. Light curve parameters for DT Cyg

Period	2.499035	$\overline{B-V}$	0.544
log P	0.397772	$\bar{B}-\bar{V}$	0.544
Epoch	4049.400	(B-V)max	0.475
Number	56	(B-V)min	0.616
Orders	5/3/2/2	Δ(B-V)	0.141
$\bar{V}$	5.778	ϕ(max)	0.972
V(max)	5.626	ϕ(min)	0.517
V(min)	5.914	σ	0.008
ΔV	0.288	<B-V>	0.543
ϕ(min)	0.549	<B> - <V>	0.539
σ	0.008	$\overline{V-R}$	0.470
<V>	5.774	$\bar{V}-\bar{R}$	0.470
$\bar{B}$	6.322	(V-R)max	0.421
B(max)	6.099	(V-R)min	0.514
B(min)	6.525	Δ(V-R)	0.093
ΔB	0.427	ϕ(max)	0.996
ϕ(max)	0.989	ϕ(min)	0.516
ϕ(min)	0.546	σ	0.010
σ	0.010	<V-R>	0.469
<B>	6.312	<V> - <R>	0.468
$\bar{R}$	5.308	$\overline{R-I}$	0.296
R(max)	5.203	$\bar{R}-\bar{I}$	0.295
R(min)	5.403	(R-I)max	0.260
ΔR	0.200	(R-I)min	0.320
ϕ(max)	0.028	Δ(R-I)	0.061
ϕ(min)	0.556	ϕ(max)	0.984
σ	0.010	ϕ(min)	0.572
<R>	5.306	σ	0.013
$\bar{I}$	5.013	<R-I>	0.295
I(max)	4.944	<R> - <I>	0.294
I(min)	5.082		
ΔI	0.138		
ϕ(max)	0.004		
ϕ(min)	0.575		
σ	0.011		
<I>	5.012		

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