

CCD Photometry of RR Lyrae Stars in NGC 6388 and M15

N.A. Silbermann¹, H.A. Smith¹, M. Bolte²,

¹*Dept. of Physics and Astronomy, Michigan State University, East Lansing, Michigan, USA* ²*Lick Observatory, UCSC, USA*

Abstract

We present preliminary results of a program of CCD photometry of RR Lyrae variable stars in the globular clusters NGC 6388 and M15.

We have begun an investigation of the RR Lyrae stars in the globular clusters NGC 6388 and M15 based on CCD photometry. Hazen and Hesser (1986) investigated the variable stars of NGC 6388 and noted that, although several studies place NGC 6388 as metal-rich as 47 Tuc, it may contain a number of RR Lyrae stars. We obtained new B, V, and R CCD observations of this cluster in 1987, 1988, and 1989 with the 0.9m and 4m telescopes at CTIO. We identified eight variable stars, two of which, v17 and v20, were found previously by Hazen and Hesser. Their v20 is badly blended but is probably an RR Lyrae star with a period of approximately 0.45 days. The six new variables are relatively close to NGC 6388 and most appear to be RR Lyrae stars. We have been able to determine a reliable period for only one of the new variables. The data on the eight variables are given in the table below.

Data for M15 were obtained with the 2.3m telescope at WIRO and, for the most part, the 0.6m telescope at MSU. Reductions of the CCD frames for M15 are still incomplete: so far, only 85 of the V frames obtained with the MSU 0.6m have been reduced with Stetson's DAOPHOT program. Over 40 RR Lyrae stars fall within the CCD frames for this cluster. We expect to eventually obtain approximately 200 V and 200 R magnitudes for each M15 variable, with a somewhat smaller number of B magnitudes.

References:

Hazen, M.L., Hesser, B.H., 1986, *Astronomical J.*, **92**, 1094.

NGC 6388 RR Lyrae Variable stars					
Star	Type	Period	ΔV	ΔB	$\langle B \rangle$
v17	RRab	0.603	15.6-17.3	16.6-18.2	17.40
v27	RRc	0.361	16.7-17.2	17.2-17.9	17.55
v28	RR	0.3 or 0.5	—	—	—
v29	RR?	short	—	—	—
v30	RRc?	0.343?	16.6-17.3	17.1-17.6	17.35
v31	RR?	short	—	—	—
v32	RR	0.4 or 0.8	16.6-17.4	17.3-18.0	17.65