

## DEEP CCD PHOTOMETRY IN M 5

Harvey B. Richer and Gregory G. Fahlman

University of British Columbia

Deep UVB CCD imagery has been obtained in three fields of the galactic globular cluster M5. The locations of these fields are at distances of 8, 21, and 58 core radii. In the middle field, which overlaps substantially with the deep photometry field of Arp, the CCD photometry reaches fainter than  $V = 26$ . Color-magnitude diagrams constructed from stars in the inner two fields are identical, to within the errors, and can be used to set an upper limit of 4% to any metallicity difference between these two fields. A U, (U - V) color-magnitude diagram is also shown for the inner field and compared with that of a more metal rich and more metal poor cluster. Major differences in the morphology of these three diagrams are present as a function of metal abundance. From the color-color diagram the reddening in the direction of M5 is determined ( $E(B - V) = 0.02$ ) as well as its metallicity ( $[M/H] = -1.13$ ). The distance to M5 is then established from fitting local subdwarfs to the lower main sequence of the cluster. This yields  $(m - M)_V = 14.3$ . Using the observationally determined parameters, an overlay of the appropriate Vandenberg and Bell isochrones yields an age estimate of 18 Gyrs for M5. Luminosity functions constructed from the three fields show excellent agreement through the range  $V = 17$  to 23. Fainter than  $V = 23$  there is some evidence for mass segregation effects due to dynamical relaxation.

Further details of this work can be found in Richer and Fahlman (1987).

### REFERENCE

Richer, H. B. and Fahlman, G. G. 1987 *Astrophys. J.*, in press.