

Optical and NIR Observation of Open Cluster NGC 7790

Jung-Deok Lee and Sang-Gak Lee

Department of Astronomy, Seoul National University

We present BVRI CCD photometry and near-infrared K photometry of the intermediate-aged open cluster NGC 7790. The reddening($E(B-V)=0.54\pm 0.04$) and the distance modulus($(m-M)_0=12.45\pm 0.05$) for the cluster were determined by zero-age-main-sequence fitting and theoretical isochrone fitting on (V, B-V), (V, V-I), (V, V-R) and also (V, V-K) color-magnitude diagrams. The cluster membership was checked for each star on purely photometric criteria. We have tried an alternative method to distinguish members from field stars. The expected colors were calculated with the derived distance modulus, then they were compared with observed colors (B-V), (V-I), (V-R), and also (V-K). Thus, a color excess $E(B-V)$ for each star was determined, which could give the minimum difference between the calculated and the observed four colors. We could make distinction between cluster members and field stars from the $E(B-V)$ distribution of stars, and could determine the binary members of the cluster. From the color-magnitude diagrams for the member stars, the same values of the reddening and the distance modulus were derived. The reddening is about the average of the previous studies, while the distance modulus results almost halfway between the distance modulus derived by Romeo et al.(1989) and Mateo & Madore(1989).