T25b Composite Luminosity Function of the SDSS Cut & Enhandce galaxy cluster catalog

○ Tomotsugu Goto、Bob Nichol(CMU)、Maki Sekiguchi (Univ Tokyo)

We construct the composite luminosity function (LF) of cluster galaxies in the g', r', i' and z' bands from the SDSS Cut & Enhance galaxy cluster catalog. In previous works (Colless 1989, Lumsden et al. 1997, Garilli et al. 1999, Paolillo et al. 2001), the composite luminosity function of galaxy clusters are produced from photographic data. CCD based uniform photometry of the SDSS imaging data enables us to study the luminosity function of cluster galaxies with extreme accuracy. Also, the large area of the SDSS ($\sim$10000 deg^2) enables us to study a sample that is one order of magnitude larger in number ($\sim$1000 clusters from the commissioning data only.) and reliable background subtraction.

We study the dependence of cluster luminosity function on galaxy morphology, radial distance from the center, surface galaxy density and color. We also compare the cluster luminosity function with the field galaxy luminosity function (Blanton et al. 2001) and we discuss the environmental effect on galaxy formation and evolution.