

The origin of dwarf galaxies in clusters: the faint end slope of the galaxy luminosity function

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Abstract

Dwarf galaxies ($M_b < -18$) are the most abundant objects in the Universe and are important because of their cosmological interest as tests of hierarchical theories. The formation of this galaxies is still an open question but red dwarf galaxies are preferentially located in high density environments pointing out a non primordial origin of this systems. Deep spectroscopic studies of galaxy clusters are need in order to put some constrains on dwarf galaxies formation and evolution. We have observed and analysed two nearby and massive clusters down to $M^* + 6$, Abell 85 ($z=0.05$) and Abell 2151 ($z=0.036$), using the spectrograph MOS instruments VI-MOS@VLT and AF2@WHT. The first and powerful tool to study the characteristics of galaxies and compare whit different density environments is the galaxy luminosity function (LF) that gives the number density of galaxies of a given luminosity. The LF can be studied for the global cluster, for the galaxies belonging or not to substructure regions, for red and blue populations and with radial dependence. The comparison of these results with literature outcomes for clusters and field, allow us to conclude that, at least for Abell 85, the environment plays a major role in the nature of the faint-end galaxies, transforming blue dwarfs in field into red ones in the cluster, but not in the formation of the LF slope.