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Luminosity Functions of Galaxy Clusters in eROSITA Final Equatorial-Depth Survey

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The galaxy luminosity function, which describes a number density of a galaxy population as a function of their luminosities, provides key insights into galaxy formation and evolution. In this study, we investigate the optical luminosity functions of galaxies in clusters identified in the eROSITA Final Equatorial-Depth Survey (eFEDS), spanning redshifts from 0.1 to 1.3 and halo masses between 10^{13} and $10^{15} M_{\odot}/h$. We use the Public Data Releases of the Hyper Suprime-Cam Subaru Strategic Survey. We conduct an empirical model to separate the red-sequence population from the whole galaxy population and conduct a statistical fore/background subtraction. We model the resulting luminosity functions using the Schechter function and constrain the parameters through Markov Chain Monte Carlo (MCMC) fitting. Finally, we examine how the Schechter parameters depend on cluster mass and redshift.

Section

Cosmology

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