

The Low Surface Brightness Universe: studying the Intra-Cluster Light in groups and clusters of galaxies

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The LCDM paradigm suggests that the intracluster light (ICL) in galaxy clusters is formed due to the gravitational interactions that occur during the formation of the Brightest Cluster Galaxies (BCG). As a result, the ICL serves as a fossil record of the mass assembly process in galaxies, and its physical properties (luminosity, color, stellar population, fraction(f_{icl})), provide insights into the formation mechanisms that contributed to the ICL and the dynamical and evolutionary state of the system. Understanding how the f_{icl} is related to the virial mass(M_{vir}) or the other properties of the host environment can help to better understand the physical processes involved in the formation of the ICL, and therefore can give us the possibility to add knowledge about all the processes involved in the evolution of the systems.

Detecting and studying the ICL is a challenging task due to its very low surface brightness and extension, requiring deep imaging and wide field and despite limited measurements of f_{ICL} , both in the Local Universe and in the higher redshift objects, no clear conclusion on the correlation with M_{vir} has been established. In this talk, I explore the relationship between f_{ICL} and M_{vir} , as well as f_{ICL} and $f_{\text{ETG}} N_{\text{ETG}}/N_{\text{ETG}}+N_{\text{LTG}}$. These results were achieved through a statistically significant and homogeneous sample of 22 groups and clusters ($z < 0.05$), taking advantage of the VEGAS data and published in the recent works by Ragusa et al 2021, 2022 and 2023.

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Galassie e Cosmologia

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