

SF2A 2023 : oral presentation

Session: S01: Amas et groupes de galaxies dans l'ère des grands relevés

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Title: Probing the impact of galaxy mass and environment on galactic growth through the study of LSB tidal features

Abstract:

To understand the evolution history of galaxies, the study and characterization of Low Surface Brightness (LSB) tidal features in the outskirts of galaxies can help put constraints on the models of galactic formation and evolution. Yet, precise classification and quantitative measurements of LSB structures for large samples of galaxies, residing in different environments from the field to clusters, are still missing, and this cannot be easily achieved through automated methods. Visual inspection thus remains a favored solution for this delicate task, however an efficient characterization process involving large samples of galaxies and multiple users is made easier and faster if using a dedicated software.

We will report the results of the visual annotations made by a group of experts with a dedicated online annotation tool. It allowed us to systematically characterize the properties (such as geometry, surface brightness or luminosities) of LSB features and extended stellar halos around a sample of 500 nearby massive galaxies in deep images from the MegaCam camera at CFHT (MATLAS, CFIS/Unions, NGVS, VESTIGE). With this unique dataset, we could make an unbiased quantitative study of the variations of tidal features and stellar halos as a function of the galaxies' morphological type, mass and environment (the field, groups and the Virgo cluster). This quantitative approach will facilitate comparison with predictions of galactic evolution and mass growth from numerical simulations.