Seminarium Astrofizyczne

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Environmental processing in and around clusters.

Galaxy clusters are the most massive gravitationally bound structures in the Universe. They are the sites where exceptional morphological transformations of galaxies occur, driven by their interactions within the complex cosmic web. Clusters are thus excellent laboratories to study galaxy evolution in extreme regimes. I will present the results of a large campaign based on IRAM facilities (30m and NOEMA) and targeting in mm different samples of galaxies in and around clusters. The final goal of the project is to evaluate the role of dense mega-parsec scale environments in processing cold gas of galaxies. The following samples of galaxies will be discussed. i) A large sample of distant ~30 brightest cluster galaxies observed in CO, over a broad range of redshift (z~0.2-2.6). They are drawn from CLASH, COSMOS, SpARCS, and DES deep fields. ii) A large sample of distant, intermediate redshift z~0.2-0.5, cluster LIRGs (luminous infrared galaxies), which have been observed in CO with the NOEMA interferometer and are drawn from the Herschel Lensing Survey (HLS) and the Local Cluster Substructure Survey (LoCuSS). iii) I will also present ongoing results of a large campaign with the aim to evaluate the pre-processing of atomic (HI) and molecular (CO) gas of galaxies before they fall into the cluster core. The sample comprises 245 galaxies in cosmological filaments, up to several virial radii around Virgo, the benchmark cluster in the local Universe. The outlined studies reveal a complex scenario, where large-scale structures have a different impact in regulating the star formation fueling and mass assembly of the considered galaxies, depending on their morphological type, location with respect to the cluster core, and redshift.

Serdecznie zapraszam,
    Agnieszka Majczyna