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LeRoy Apker Award Talk: The Velocity Structure of Galaxy Clusters

MATTHEW BECKER, University of Chicago

The phase space distribution of galaxies in and around galaxy clusters encodes fundamental information about cluster formation, mass, and structure. Using the maxBCG cluster catalog, produced from imaging data in the Sloan Digital Sky Survey, we study the BCG-galaxy velocity correlation function. By understanding its non-Gaussianity, we model the distribution of velocity dispersion at fixed richness and compute the velocity dispersion function. Like the cluster mass function, the velocity dispersion function can be used to understand cosmology and structure formation. Additionally we measure the segregation of galaxies in velocity space as a function of various observable properties.