~~environment. We conclude that mergers affect a cluster population mainly through the preprocessing of recently accreted galaxies.~~

[구 GC-12] Barred Galaxies Are More Abundant in Interacting Clusters: Bar Formation by Cluster-Cluster Interactions

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Bars are commonly found in disk galaxies. However, how bars form is yet unclear. There are two common pictures for the bar formation mechanism. Bars form through a physical process inherent in galaxies, or through and external process like galaxy-galaxy interaction. In this paper, we present the observational evidence that bars can form from another channel, namely a cluster-cluster interaction. We examined 105 galaxy clusters at $0.015<z<0.060$ that are selected from the SDSS data, and identified 16 interacting clusters. By looking into the fraction of barred disk galaxies in these clusters, we show that the barred disk galaxy fraction is about 1.5 times higher in interacting clusters than in clusters with no clear sign of ongoing interaction (41% vs 27%). There is no increase in close neighbors around barred galaxies in interacting clusters, indicating that galaxy-galaxy interaction during the cluster interaction is not responsible for the enhancement of the bar fraction. We also find that the bar fraction is higher for galaxies with higher stellar mass and B/T, and that, depending on the galaxy stellar mass, the bar formation may or may not accompany increase in star formation rate. These results suggest that bars can form due to a change in the large scale environment caused by cluster-cluster interaction.

[구 GC-13] KROSS: Probing the Tully-Fisher Relation over Cosmic Time

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Using the K-band Multi-object Spectrograph (KMOS) at the Very Large Telescope (VLT), the KMOS Redshift One Spectroscopic Survey (KROSS) has gathered integral-field data for ~800 star-forming galaxies at a redshift z~1, when the universe was roughly half its current age and forming the bulk of its stars. With spatially-resolved observations, KROSS reveals galaxies that are both gas-rich and highly turbulent. It is possible to derive the observed and baryonic Tully-Fisher (luminosity - rotation velocity) relations, thus constraining the mass-to-light ratios and total (luminous + dark) masses of the galaxies. This in turn highlights the dependence of the relation zero-point on the degree of rotational support of the galaxies (rotational velocity to velocity dispersion ratio). By degrading and analogously analysing integral-field data of hundreds of local galaxies from the Sydney-AAO Multi-object Integral-field Spectrograph (SAMI) survey, a robust comparison z=0 Tully-Fisher relation can also be derived, thus further constraining the luminous and dark mass growth of disk galaxies over the last 7 billions years. This unique comparison also reveals that systematic effects associated with sample selection and analysis methods are as large as the effects expected from cosmological evolution, and thus that most other comparisons employing heterogeneous data and/or methods can safely be ignored.

[구 GC-14] The development of field galaxies in the first half of the cosmic history

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One of the most prevalent knowledge about disk galaxies, which dominate the population of the local Universe, is that they consist of stellar structures with different kinematics, such as thin disk, bulge, and halo. Therefore, investigating when and how these components develop in a galaxy is the key to understanding the evolution of galaxies. Using the NewHorizon simulation, we can resolve the detailed structures of galaxies, in the field environment, from the early Universe where star formation and mergers were most active. We first decompose stellar particles in a galaxy into a disk and a dispersion-dominated, spheroidal, component based on their orbits and then see how these components evolve in terms of mass and structure. At high redshift z~3, galaxies are mostly dispersion-dominated as stars are formed misaligned with the galactic rotational axis. At