[구GC-21] Molecular gas properties under ICM pressure: A Case study of NGC4402

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Interactions between the galactic interstellar medium (ISM) and the intra cluster medium (ICM) are believed to be one of the main processes affecting galaxy evolution in cluster environments. The aim of our research is to study the molecular gas properties of a galaxy under the ICM pressure in the cluster environment. It has been well known that cluster galaxies are deficient in atomic hydrogen gas (HI gas) compared to their field counterparts and now there is much evidence that low density ISM is being removed by ram pressure due to ICM wind. Meanwhile, no significant molecular gas deficiency of the cluster galaxy population has been found yet they show overall lower star formation rate than galaxies in the field, and it is still puzzling how the star formation could decrease without stripping of dense molecular gas. To address this issue, we probe the detailed molecular gas properties of NGC 4402, located near the cluster center, as part of a study of four spiral galaxies in the Virgo Cluster. NGC 4402 is well known undergoing ram pressure stripping with a truncated HI disk(D_{HI}/D_{opt} ~ 0.75 and only 36% of HI gas compare to field galaxies of a similar size) and a disturbed gas morphology. Comparing the high resolution 12CO and 13CO data of NGC 4402 from the Sub Millimeter Array (SMA) with existing other wavelength data, we probe the spatial distribution and a physical condition of molecular gas under strong ICM pressure. We discuss the star formation activity might have been altered and hence how the global color of NGC4402 would change in the future.

[포GC-41] Merging Features and Optical-NIR Color Gradient of Early-type Galaxies

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It has been suggested that merging plays an important role in the formation and the evolution of early-type galaxies (ETGs). Optical-NIR color gradients of ETGs in high density environments are found to be less steep than those of ETGs in low density environments, hinting frequent merger activities in ETGs in high density environments. In order to examine if the flat color gradients are the result of dry mergers, we studied the relations between merging features, luminosities, environments and color gradients of 196 low redshift ETGs selected from Sloan Digital Sky Survey (SDSS) Stripe82. Near Infrared (NIR) images are taken from UKIRT Infrared Deep Sky Survey (UKIDSS) Large Area Survey (LAS). Color (r-K) gradients of ETGs with tidal features are a little flatter than relaxed ETGs, but not significant. We found that massive (> 10^11.3 solar masses) ETGs have ~40% less scattered color gradients than less massive ETGs. The less scattered color gradients of massive ETGs could be evidence of dry merger processes in the evolution of massive ETGs. We found no relation between color gradients of ETGs and their environments.