[구 GC-20] Environmental dependence of AGN activity in the SDSS main galaxy sample

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We investigate the role of small-scale and large-scale environments in triggering nuclear activity of the local galaxies using a volume-limited sample with $M_r < -19.5$ and $0.02 < z < 0.0685$ from the Sloan Digital Sky Survey Data Release 7. To fix the mass of the supermassive black hole in its host galaxy, we limit the central velocity dispersion of the sample galaxies. The active galactic nuclei (AGN) host sample is composed of Type II AGNs identified with flux ratios of narrow emission lines with S/N >6. In this study, we find that the AGN fraction of late-type host galaxies are commonly larger than of early type galaxies. The AGN fraction of host galaxy with late-type nearest neighbor starts to increase as the host galaxy approaches the virial radius of the nearest neighbor (about a few hundred kpc scale). Our result may support the idea that the hydrodynamic interaction with the nearest neighbor plays an important role in triggering the nuclear activity of galaxy. The early-type galaxies in high density regions show decline of AGN activity compared to ones in lower density regions, whereas the direction of the environmental dependence of AGN activity for late-type galaxies is rather opposite. We also find that the environmental dependence of star formation rate is analogous to one of AGN activity except in the high density region.

[구 GC-21] Outflows in Sodium Excess Objects

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van Dokkum and Conroy revisited the strong Na I lines at 8200Å found in some giant elliptical galaxies and interpreted it as evidence for bottom-heavy initial mass function. Jeong et al. later found a lot of galaxies showing strong Na D doublet absorption line at 5900Å (Na D excess objects; a.k.a. NEOs) and showed that their origins can be different for different types of galaxies. While the excess in Na D seems related with interstellar medium in late-type galaxies, smooth-looking early-type NEOs suggest no compelling sign of ISM contributions. To test this finding, we measured doppler shift in the Na D line. We hypothesized that ISM is more likely to show blueshift due to outflow caused by either star formation or AGN activities. In order to measure the doppler shift, we tried both Gaussian and Voigt functions to fit each galaxy spectrum near the Na D line. We found that Voigt profiles reproduce the shapes of the Na D lines markedly better. Many of late-type NEOs clearly show blueshift in their Na D lines, which is consistent with the former interpretation that the Na D excess found in them is related with star formation-caused gas outflow. On the contrary, early-type NEOs do not show any notable doppler component, which is also consistent with the interpretation of Jeong et al. that the Na D excess in early-type NEOs is likely not related with ISM activities but purely stellar in origin.

[구 GC-22] The Effects of Ram Pressure on Dwarf Galaxies

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Using numerical simulations, we study the effects of ram pressure stripping on dwarf galaxies. It is commonly assumed that ram pressure only affects the gas component of a galaxy. We find that it actually can affect the dynamics of the stars too, and even the dark matter surrounding the disk - an effect dubbed 'ram pressure drag'. We study the effects of ram pressure drag on tidal dwarf galaxies, and find the response is very strong. Tidal dwarfs may be entirely destroyed by gas removal, and their stellar dynamics may appear heavily dark matter dominated where no dark matter exists. We discuss the consequences for tidal dwarf evolution, tidal streams, and disk galaxy evolution in general.

[구 GC-23] Effects of Magnetic Fields on the Gaseous Structures in Spiral Galaxies

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Stellar spiral arms and magnetic fields in disk galaxies are important in the formation of gaseous