[구GC-13] Effects of Galaxy-Galaxy Interaction on Morphology and Luminosity of High-redshift Galaxies

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We present the evidence for the morphology and luminosity transformation of galaxies at $0.4<z<1$ using spectroscopic samples of galaxies in the Great Observatories Origins Deep Survey (GOODS) and the All-Wavelength Extended Groth Strip International Survey (AEGIS). We have found that galaxy morphology depends critically on the local environment, which is characterized by the morphology of the nearest neighbor galaxy and the mass density due to the nearest neighbor galaxy, in addition to the luminosity and the large scale density. We have also found that more luminous galaxies tend to be more isolated systems. Our results are consistent with those from nearby galaxies, indicating that galaxy-galaxy interaction over a long period of time strongly affects the galaxy evolution.

[구GC-14] Environmental dependence of AGN activity. I.: the effects of host galaxy

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Using a large sample of local galaxies (144,940) from Sloan Digital Sky Survey Data Release 5, we compare AGN host galaxies with non-AGN galaxies at matched luminosity, velocity dispersion, color, color gradient, or concentration index, to investigate how AGN activity is related with host galaxy properties. We find that AGNs are dominantly hosted by intermediate-mass late-type galaxies. The AGN fraction increases with galaxy luminosity at given velocity dispersion. At fixed luminosity, however, the AGN fraction of early-type galaxies monotically decreases with velocity dispersion, while the AGN fraction of late-type galaxies peaks at intermediate velocity dispersion, indicating a clear dependence on the host morphology. For both morphological types, galaxies with intermediate color (with a peak at $u-r \sim 2$—2.4) show higher AGN fraction than bluer and redder color galaxies, implying that galaxies in transition to the red sequence are more likely to host AGN. Typical red early-type galaxies are less likely to host AGN. However, when these galaxies have a bluer outer part, the AGN farction increases. The concentration index shows a similar effect: more concentrated late-type galaxies show higher AGN fraction. These results are consistent with a scenario that more massive, redder, and more concentrated early-type galaxies are harder to host AGNs since these galaxies already consumed gas at the center or do not have sufficient gas supply mechanism to the center. In contrast, more massive, redder, and more concentrated late-type galaxies are more likely to host AGNs since perhaps some fraction of disk-dominated galaxies may not host massive black holes or may host very low-power AGNs.