[박GC-09] Starburst and AGN activity in local infrared luminous galaxies

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Luminous infrared galaxies (LIRGs; $L_{IR} > 10^{11}$ $_{Lsun}$) are the most powerful objects in the local Universe. Previous work suggested that dust re-processing of starburst and/or active galactic nuclei (AGN) activity, triggered by galaxy interactions, is responsible for their enormous infrared emission. To understand the nature of LIRGs, it is essential to determine their spectral types. Optical spectral types of 115 ultraluminous infrared galaxies in the southern sky are presented using CTIO observations. The AGN fraction is on average 50% and increases with infrared luminosity. Near-infrared spectral types of 36 LIRGs are also presented based on AKARI observations. In the sample, 12 optically elusive buried AGNs are found. To investigate the evolutionary sequence of LIRGs, star formation histories of ~6000 LIRGs in the SDSS and IRAS/AKARI matched sample are derived by comparing observed optical spectra and stellar population models.

AGN-dominated LIRGs are currently massive relative to starburst-dominated LIRGs, which originates from an enhancement of star formation at intermediate-ages. For ~1100 early-type LIRGs, optical and NIR fundamental planes (FPs) are constructed. The FP of LIRGs is significantly different from that of normal early-type galaxies, but the difference is minimized in low luminous and AGN-like LIRGs. These findings support that the importance of AGN is growing as infrared luminosity increases and that LIRGs follow at least in the high mass regime the standard evolutionary scenario: starburst LIRGs evolve into AGN LIRGs and finally into normal early-type galaxies.

[구GC-10] From Brown Dwarfs to Gamma Ray Bursts at High Redshift: Overview of Current CEOU Activities

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We present the current research activities of the Center for the Exploration of the Origin of the Universe, a center established at Seoul National University with the Creative Research Initiative program. Our activities focus on observational studies of distant objects such as gamma-ray bursts, quasars, and proto-cluster of galaxies, but we also carry out other observational and theoretical studies in related topics. We also developed a new instrument, Camera for Quasars at Early Universe (CQUEAN) in collaboration with Kyunghee University group, and have secured observing facilities such as UKIRT and McDonald 2.1m observatory. Our research highlights include results such as the discovery of high redshift quasars and gamma ray bursts, the discovery of tidal disruption event at z=0.38 and peculiar gamma ray burst events, analysis of proto-clusters of galaxies, the discovery of brown dwarfs, and development of CQUEAN and its usage at the McDonald observatory.