

**[KGC-32] The Interplay between Star Formation and AGN Activities :
A Case Study of LQSONG**

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One of the most intriguing questions regarding black hole (BH)-galaxy co-evolution picture is how the BH accretion, or active galactic nucleus (AGN) activity is linked to star formation (SF) activity. While it is suggested that AGN luminosity of quasars correlates with SF luminosity, it is still unclear how AGN activity is connected to SF activity based on host galaxy properties. Utilizing AKARI's unique slit-less spectroscopic capability and wavelength coverage, we probed star formation activity of several types of AGNs by measuring the PAH 3.3 μm emission. First, we detected the PAH 3.3 μm emission from seven out of 27 Seyfert type-1 galaxies at $z \sim 0.36$. While these galaxies deviate significantly from the local $M_{\text{BH}}-\sigma$ relation meaning their black holes proceed the host galaxies in terms of evolution, they appear to follow the correlation between nuclear SF and AGN activities of local Seyfert type-1 galaxies. This implies that SF and AGN activities are directly connected at the nuclear region for these Seyfert type-1 AGNs. We also obtained 2-5 μm spectra for subsamples of Quasar Spectroscopic Observation in Near-infrared Grism (QSONG) which consists of reverberation-mapped AGNs and PG-QSOs. We detected the PAH 3.3 μm emission from 16 out of 31 reverberation-mapped AGNs and 10 out of 49 PG-QSOs and measured their line strengths.

We present the correlations between SF and AGN activities and discuss if there is any dependency of the correlations on properties of host galaxies, such as morphology, or the presence of radio jets.

**[KGC-33] Multiband photometry of globular clusters toward the central
region of the Fornax cluster: Radial variation of GC color distributions**

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We present wide-field multiband photometry of globular cluster (GC) systems toward the central region of the Fornax cluster of galaxies, including NGC 1399, NGC 1404, and NGC 1387. Observation was carried out through four optical passbands (U, B, V, and I) with the Mosaic II CCD imager mounted on the 4-m Blanco telescope at Cerro Tololo Inter-American Observatory (CTIO). This marks one of the widest U-band photometric studies on GC systems. GC candidates are selected among point sources based on their two color diagrams together with a magnitude cut. We investigate the radial variation of color distributions for the GC systems, focusing on the fundamental parameters that characterize bimodal distributions; the number ratio between blue and red GCs, the mean colors of the groups, and their color dispersions. We discuss the implication of our result regarding the origin of GC color bimodality.