[구GC-07] AKARI Near-Infrared Spectroscopy of Blue Early-type Galaxies

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The first near-infrared (NIR) spectroscopic survey of SDSS-selected blue early-type galaxies (BEGs) has been conducted using the AKARI/IRC. The NIR spectra of 36 BEGs are successfully secured, which are well balanced in their SF/Seyfert/LINER type composition. For high signal-to-noise ratio, we stack the BEG spectra all and in bins of several properties: color, specific star formation rate and optically-determined spectral type. We estimate the NIR continuum slope and the 3.3 micron PAH emission equivalent width in the stacked BEG spectra, and compare them with those of SSP model galaxies and known ULIRGs. We first report the NIR spectral features of BEGs and discuss the nature of BEGs based on the comparison with other objects.

[구GC-08] Dependence of Barredness of Late-Type Galaxies on Galaxy Properties and Environment

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We investigate the dependence of occurrence of bar in galaxies on galaxy properties and environment. The environmental conditions considered include the large-scale background density and distance to the nearest neighbor galaxy. We use a volume-limited sample of 33,296 galaxies brighter than $M_r = -19.5 + 5\log h$ at $0.02 \leqq z \leqq 0.05489$, drawn from the Sloan Digital Sky Survey Data Release 7. We classify the galaxies into early and late types, and identify bars by visual inspection. We find that the fraction of barred galaxies (f_{bar}) is 18.2% on average in the case of late-type galaxies, and depends on both u-r color and central velocity dispersion (σ); f_{bar} is a monotonically increasing function of u-r color, and has a maximum value at intermediate velocity dispersion ($\sigma \simeq 170\,\mathrm{km\ s^{-1}}$). This trend suggests that bars are dominantly hosted by systems having intermediate-mass with no recent interaction or merger history. We also find that f_{bar} does not directly depend on the large-scale background density as its dependence disappears when other physical parameters are fixed. We discover the bar fraction decreases as the separation to the nearest neighbor galaxy becomes smaller than 0.1 times the virial radius of the neighbor regardless of neighbor's morphology. These results imply that it is difficult for bars to be maintained during strong tidal interactions, and that the source for this phenomenon is gravitational and not hydrodynamical.