

[7GC-21] KVN Observation on Radio-selected AGNs hosted by Elliptical Galaxies

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We have performed simultaneous observations at 22GHz and 43GHz on AGNs hosted by elliptical galaxies using KVN radio telescope. We have constructed the sample, based on two major surveys in radio and optical band, i.e. Faint Images of the Radio Sky at Twenty-Centimeters (FIRST) and Sloan Digital Sky Survey (SDSS) DR7, respectively. We restricted the redshift range $0.01 < z < 0.06$ and the absolute magnitude $M_r < -19.4$ in order to satisfy volume limited sample. We also checked clear detection of four distinctive emission lines ([NII], [OIII], H α , H β) so as to utilize on BPT diagram, distinguishing AGNs from star-forming galaxies. Elliptical galaxies have been selected by visual inspection making use of SDSS optical images. Then, we cross-matched the elliptical galaxies with FIRST detections. About 35% of the galaxies have been detected throughout KVN observations. We derive spectral index, applying the flux of different radio frequencies from FIRST (1.4GHz) and KVN (22GHz) and classify into steep, flat or inverted spectrum. We have found that most of the detected galaxies have flat spectrum while the rest of them have steep spectrum. This implies that a number of detected galaxies might have compact structure associated with the central region of the galaxies. The relation between black hole mass and radio luminosity has shown relatively tighter correlation in high frequency than in low frequency, which confirms that high frequency in radio band is appropriate to study the center of the galaxies.

[7GC-22] On the Nature of LINERs: A Clue from Keck/LRIS Observations

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Low-ionization nuclear emission-line regions (LINERs) have been generally regarded to be powered by active galactic nuclei (AGNs), yet still a number of alternative explanations on the origin of LINER emission are suggested; for example, planetary nebulae nuclei of massive stars, supernovae shocks from death of massive stars, and old stellar populations. Interestingly, a majority of recent star formation early-type galaxies (ETGs) in local universe presents such LINER emission lines. Given that situation, revealing the true nature of LINERs is a crucial step to constrain the evolution path to quiescent ETGs. To resolve the issue, we use Keck/LRIS to obtain spatially resolved spectra on a carefully selected ETG. The ETG SDSS J091628.05+420818.7 at redshift $z \sim 0.024$ shows modest LINER emission line features without any detection of 21 cm radio continuum nor X-ray emission. We perform a stellar continuum subtraction and measure emission line strengths and their uncertainties for each spectrum from five apertures along the slit with size of 1 arcsecond (~ 0.5 kpc). We find that extended spatial distributions of four emission lines H α , H β , [OIII] λ 5007, and [NII] λ 6583, and they can be explained by central emission blurring effect. We conclude that the emissions seem to be centrally concentrated, indicating the AGN-nature of LINERs.