[포GC-24] A pilot study on the radio flux variability of dwarf galaxies

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The black hole occupation fraction in dwarf galaxies can provide an important clue for understanding the black hole seed formation. As a pilot feasibility study, we performed a KVN radio monitoring campaign over 8 months for 4 dwarf galaxies. Two galaxies (IC10 and NGC1569) are detected at 22 GHz, respectively with 39 mJy, 83 mJy. The measured flux (rms) variability is 13% and 8%, respectively for IC10 and NGC1569, while the mean flux uncertainty is 25% and 12%. Thus, the detection of the radio flux variability is at best marginal. Detecting flux variability of faint sources (i.e., 22 GHz flux < 200 mJy) seems challenging with the KVN single dishes. Combining with the 1.4 GHz flux measurements from the NVSS, we find that these two galaxies have a steep spectrum, supporting that the radio sources are AGNs. Instead of a monitoring, single-epoch multi-band observations can be effective for identifying radio AGNs by providing the constraint of the radio continuum slope.

[포GC-25] The main sequence of star forming galaxies at intermediate redshift

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The goal of my study consists at attempt to understand what are the main processes at the origin of the star formation in the galaxies over the last 10 billions years. While it was proposed in the past that merging of galaxies has a dominant role to explain the triggering of the star formation in the distant galaxies having high star formation rates. In the opposite, more recent studies revealed scaling laws linking the star formation rate in the galaxies to their stellar mass or their gas mass. The small dispersion of these laws seems to be in contradiction with the idea of powerful stochastic events due to interactions, but rather in agreement with the new vision of galaxy history where the latter are continuously fed by intergalactic gas. I was especially interested in one of this scaling law, the relation between the star formation (SFR) and the stellar mass (M*) of galaxies, commonly called the main sequence of star forming galaxies. I have studied this main sequence, SFR-M*, in function of the morphology and other physical parameters as the radius, the colour, the clumpiness. The goal was to understand the origin of the sequence's dispersion related to the physical processes underlying this sequence in order to identify the main mode of star formation controlling this sequence. This work needed a multi-wavelength approach as well as the use of galaxies profile simulation to distinguish between the different galaxy morphological types implied in the main sequence.