and in the absence of bars, galaxy interactions/ mergers become important. In other words, in the presence of a massive central engine, the role of the two gas inflow mechanisms is reduced or almost disappears. We also find that bars in massive galaxies are very decisive in increasing AGN fractions when the host galaxies are inside clusters.

[구 GC-14] Magnetic Field Strengths of Flaring Region in the Jet of CTA 102

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We present the magnetic field strengths of CTA 102 using multi-frequency data at 2.6-343.5 GHz in order to study the physical origins of radio flares. The observations at 22 and 43 GHz were conducted using the single-dish radio telescopes of the Korean VLBI Network (KVN) from December 2012 until May 2018 (MJD 56200-58400). We used multi-frequency data obtained from the Effelsberg 100-m, OVRO 40-m, Metsähovi 14-m, IRAM 30-m, SMA, ALMA, and VLBA telescopes. During the period of the observations, two major flares (R1 and R2) are seen clearly at 15 and 37 GHz during MJD 57500-57800 and MJD 58000-58300, respectively. The source shows typical variability with time-scales ranging from 20-161 days at 15 GHz. The variability Doppler factor is in the range of 11.51-31.23. The quasi-simultaneous radio data are used to investigate the synchrotron spectrum of the source, finding that the synchrotron radiation is self-absorbed. The turnover frequency and the peak flux density of the synchrotron self-absorption (SSA) spectra are in ranges of 38.06-167.86 GHz and 1.49-10.38 Jy, respectively. From the SSA spectra, magnetic field strengths are estimated to be < 10 mG. The equipartition magnetic field strengths are larger than the SSA magnetic field strengths by a factor of > 100. This indicates that the radio flares may be related to a particle energy-dominated emission region.

[구 GC-15] Tales of AGN tails: How AGN tails become radio relics in merging galaxy clusters?

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Radio relics, Mpc-size elongated diffuse radio emissions found at galaxy cluster outskirts, are known as the result of shock acceleration during the cluster merger. Theories have claimed that low Mach number shocks are too inefficient to create the observed properties of radio relics. Alternative scenarios such as fossil cosmic ray electrons (CRes) from AGNs are required to explain the observations. However, how exactly the fossil CRes from AGNs can supply the Mpc-size radio relic is still an open question. In this study, we present our recent uGMRT radio observation results of the merging galaxy cluster Abell 514. We found three remarkable AGN jet tails that may have undergone multiple reorientations and extend nearly 800 kpc. Using multi-frequency data, we have performed spectral analysis along the AGN tails and track how the tails lose or gain energy as they propagate in the intracluster medium. We will discuss whether these AGN jets can provide sufficient seed CRes to radio relics.

[구 GC-16] Kennicutt-Schmidt law with H I velocity profile decomposition in NGC 6822

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We present H I gas kinematics and star formation activities of NGC 6822, a dwarf galaxy located in the Local Volume at a distance of ~ 490 kpc. We perform profile decomposition of the line-of-sight velocity profiles of the high-resolution (42.4" × 12" spatial; 1.6 km/s spectral) H I data cube taken with the Australia Telescope Compact Array (ATCA). For this, we use a new tool, the so-called BAYGAUD (BAYesian GAUssian Decompositor) which is based on Bayesian Markov Chain Monte Carlo (MCMC) techniques, allowing us to decompose a line-of-sight velocity profile into