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We report the first detection of RR Lyrae variable stars in the Crater II dwarf galaxy, a recently discovered ultra-faint satellite of the Milky Way. Based on B, V time series photometry obtained with the Korea Microlensing Telescope Network (KMTNet) at CTIO, Chile, we have identified ~45 fundamental-mode (ab-type) and ~2 first-overtone (c-type) RR Lyrae stars by adopting template light-curve fitting method. Our preliminary analysis suggests an Oosterhoff-intermediate classification of this galaxy from the mean period of the RRab stars, $\langle P_{ab} \rangle \simeq 0.63$ days, and the location of them on the period-amplitude diagram. We discuss the properties of the RR Lyare stars in this galaxy.

[구 KMT-06] Intra-night optical variability of AGN in COSMOS field

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Optical variability is one way to probe the nature of the central engine of AGN at smaller linear scales, and previous studies have shown that optical variability of AGN is more prevalent at longer timescales and at shorter wavelengths. To understand the properties and physical mechanism of variability, we are performing the KMTNet Active Nuclei Variability Survey (KANVaS). Especially, we investigated intra-night variability of AGN with KMTNet data which observed COSMOS field during 3 separate nights from 2015 to 2016 in B, V, R, and I bands. Each night was composed of 5, 9, and 11 epochs with 20-30 min cadence. To find AGN in the COSMOS field, we applied multi-wavelength selection methods. Using X-ray, mid-infrared, and radio selection methods, 50-60, 130-220, 20-40 number of AGN are detected, respectively. Achieving photometric uncertainty ~0.01mag by differential photometry, we employed a standard time-series analysis tool to identify variable AGN, chi-square test. Preliminary results indicate that there is no evidence of intra-night optical variability of AGN. It is possible that previous studies discovered intra-night variability used inappropriate photometric error. However, main reason seems that our targets have fainter magnitude (higher photometric error) than that of previous studies. To discover variability of AGN, we will investigate longer timescale variability of AGN.

Korea VLBI Network

[구 KVN-01] Flux Variation and Structural Change in 3C 84 with Long-Term Monitoring by KVN and KaVA at Millimeter Wavelengths

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3C 84 (NGC 1275) is one of the most famous radio galaxies and a lot of VLBI observations have been conducted to date because of its brightness and proximity (z = 0.0176; 1 mas = 0.36 pc). The source is entering a significantly active phase with long-term increase in radio flux at cm wavelengths since 2005, and the increased activity at very-high-energy (VHE) gamma rays.

In order to study properties of sub-pc-scale structure and the circumnuclear environment in 3C 84, we have conducted multi-epoch VLBI observations with the Korean VLBI Network (KVN) at 86 and 129 GHz, and monthly monitoring by the KVN and VERA Array (KaVA) at 43 GHz from 2015 August. Following the report in the previous KAS meeting (cf. 2016 KAS Autumn Annual Meeting, [구 GC-10]), we present further results mainly on the basis of twelve-epoch observations with KaVA at 43 GHz.

Through the monthly monitoring with KaVA, we found that peak intensity of the pc-scale southern lobe (C3) was increased from 2.60 Jy beam^{-1} in 2015 October to 9.80 Jy beam^{-1} in 2016 June, corresponding to a flux increase of 3.7 times in eight months. We also detected change in direction of motion of C3 from transversal to outward with respect to C1, concurrently with the beginning of its flux increase in 2015 October. We consider that these phenomena are due to interaction of C3 with