camera at Siding Spring Observatory site has been fine tuned and the protected silver coat of the primary mirror has been replaced with the bare aluminium coat due to the degradation of reflectivity of the primary mirror surface. A plan of KMTNet observation system improvement for 2017 will be introduced in this talk.

[구 KMT-02] OGLE-2015-BLG-1482L:The first isolated Galactic bulge microlens

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The single lens event OGLE-2015-BLG-1482 has been simultaneously observed from two ground-based surveys and from Spitzer. The Spitzer data exhibit finite-source effects due to the passage of the lens close to or directly over the surface of the source star as seen from Spitzer. Thanks to measurements of the microns parallax and the finite-source effect, we find that the lens of OGLE-2015-BLG-1482 is a very low-mass star with the mass 0.10±0.02 M⊙ or a brown dwarf with the mass 55±9 MJ, which are respectively located at DLS = 0.80±0.19 kpc and DLS = 0.54±0.08 kpc, and thus it is the first isolated low-mass microlens that has been located in the Galactic bulge. The degeneracy between the two solutions is severe. The fundamental reason for the degeneracy is that the finite-source effect is seen only in a single data point from Spitzer and this single data point gives rise to two ρ solutions.

[구 KMT-03] KMTNet time-series photometry of the doubly eclipsing candidate stars in the LMC

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Multiple stellar systems composed of triple, double+double or double+triple, etc. are very rare and interesting objects for understanding the star formation and dynamical evolution. However, only six systems have been found to be a doubly eclipsing quadruple, which consists of two eclipsing binaries, and four systems to be a triply eclipsing hierarchical triple. Recently, the 15 doubly eclipsing multiple candidates located in the Large Magellanic Cloud (LMC) have been reported by the OGLE project. In order to examine whether these candidates are real multiple systems with eclipsing features, we performed a high-cadence time-series photometry for the LMC using the KMTNet (Korea Microlensing Telescope Network) 1.6 m telescopes in three site (CTIO, SAAO, and SSO) during 2016-2017. The KMTNet data will help reveal the photometric properties of the multiple-star candidates. In this paper, we present the VI light curves and their preliminarily analyses for 12 of the 15 eclipsing systems in the LMC, based on our KMTNet observations and the OGLE-III survey data from 2001-2009.

[구 KMT-04] Introduction to sample light curves of optical transients discovered by the KMTNet Supernova Program

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We introduce sample light curves of optical transients discovered by the KMTNet Supernoa Program, focusing on their early discoveries and rapid evolutions decoded in the high-cadence observations of the program. For some sources, we also show their spectra obtained either from rapid Target-of-Opportunity follow-up observations immediately after their discoveries or from regularly-scheduled observations. We expect the program to bring unprecedented insights into what is happening during early phases of various types of optical transients, centered on supernovae.

[구 KMT-05] A KMTNet search for RR Lyrae Stars in the Crater II Ultra-Faint Dwarf Galaxy

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Sang-Il Han, Soung-Chul Yang, and Hyunjin Jeong
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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