5.0 hours. In order to measure the stellar flux of each target, we made a 'observation coordinate catalog' by using the 'OGLE-III catalog' and 'DoPhot package'. The catalog contains approximately 0.3 billion stars in the bulge fields. We also search for a microlensing event candidates by means of the 'Event Finder algorithm' which calculates the restricted single-lens fitting (t0, teff, u0; u0 = 0 or 1) model. As a result, we found more than 2,000 microlensing event candidates per each year including about 700 events from the other survey groups such as OGLE and MOA. In this year, we will improve our current pipeline system, e.g. upgrading the catalog and applying real-time photometry.

[구 KMT-07] Current status and future plans of KMTNet microlensing experiments

Sun-Ju Chung[1,2], Andrew Gould[1,3,4], Youn Kil Jung[1], Kyu-Ha Hwang[1], Yoon-Hyun Ryu[1], In-Gu Shin[5], Jennifer C. Yee[5], Wei Zhu[6], Cheongho Han[7], Sang-Mok Cha[1], Dong-Jin Kim[1], Hyun-Woo Kim[1], Seung-Lee Kim[1,2], Chung-Uk Lee[1,2], Yongseok Lee[1]
[1]Korea Astronomy and Space Science Institute, Korea, [2]Korea University of Science and Technology, Korea, [3]Department of Astronomy, Ohio State University, USA, [4]Max-Planck-Institute for Astronomy, Germany, [5]Harvard-Smithsonian Center for Astrophysics, USA, [6]Canadian Institute for Theoretical Astrophysics, University of Toronto, Toronto, ON M5S 3H8, Canada

We introduce a current status and future plans of Korea Microlensing Telescope Network (KMTNet) microlensing experiments, which include an observational strategy, pipeline, event-finder, and collaborations with Spitzer. The KMTNet experiments were initiated in 2015. From 2016, KMTNet observes 27 fields including 6 main fields and 21 subfields. In 2017, we have finished the DIA photometry for all 2016 and 2017 data. Thus, it is possible to do a real-time DIA photometry from 2018. The DIA photometric data is used for finding events from the KMTNet event-finder. The KMTNet event-finder has been improved relative to the previous version, which already found 857 events in 4 main fields of 2015. We have applied the improved version to all 2016 data. As a result, we find that 2597 events are found, and out of them, 265 are found in KMTNet-K2C9 overlapping fields. For increasing the detection efficiency of event-finder, we are working on filtering false events out by machine-learning method. In 2018, we plan to measure event detection efficiency of KMTNet by injecting fake events into the pipeline near the image level. Thanks to high-cadence observations, KMTNet found fruitful interesting events including exoplanets and brown dwarfs, which were not found by other groups. Masses of such exoplanets and brown dwarfs are measured from collaborations with Spitzer and other groups. Especially, KMTNet has been closely cooperating with Spitzer from 2015. Thus, KMTNet observes Spitzer fields. As a result, we could measure the microlens parallaxes for many events. Also, the automated KMTNet PySIS pipeline was developed before the 2017 Spitzer season and it played a very important role in selecting the Spitzer target. For the 2018 Spitzer season, we will improve the PySIS pipeline to obtain better photometric results.

[구 KMT-08] The KMTNet View of Variable Stars : Pulsation and Rotation of the EL CVn-type Eclipsing Binary J0247-25

Seung-Lee Kim[1], Jae Woo Lee[1], Chung-Uk Lee[1], Yongseok Lee[1,2], Dong-Joo Lee[1], Kyeongsoo Hong[3], Sang-Mok Cha[1,2], Dong-Jin Kim[1], Byeong-Gon Park[1]
[1]Korea Astronomy and Space Science Institute, [2]School of Space Research, Kyung Hee University, [3]Institute for Astrophysics, Chungbuk National University

EL CVn-type eclipsing binaries are composed of a massive A-type main-sequence primary star and a hotter B-type secondary one. These are worthy of particular attention because the secondary stars are rare objects to be extremely low-mass white dwarf precursors (ELM proto-WD) with the mass of $\leq$0.2 $M_{\odot}$, evolving to higher effective temperatures and higher surface gravities. A few of them were discovered to show multi-periodic pulsations in one or both components.

We monitored one of these rare and interesting objects, J0247-25 (=1SWASP J024743.37-251549.2), at two KMTNet sites of SAAO in South Africa and SSO in Australia. The observations were performed with the KMTNet 1.6m telescopes and pre-science 4K CCD cameras during the system test run from July to November 2014. Using the photometric data obtained for a total of 23 nights, we constructed well-defined eclipsing light curves in B/V-bands and derived absolute parameters (mass and radius, etc.) of each binary component. After subtracting model eclipsing curves from the data, we detected seven frequencies with 33~53 cycles per day (c/d) and identified them to be Delta Sct-type pulsations originated from the A-type primary component. Five frequencies were turned out to be excited by rotational splitting of non-radial pressure modes, enabled us to investigate rotational properties. We could not detect any frequency higher than 100 c/d, implying that pulsation amplitudes of the proto-WD secondary decrease greatly.