probability area in GW localization map, we expect to observe early light-curve of GW optical counterpart. After identification, follow-up observation with various KMTNet bands and other telescopes like Gemini and UKIRT will also be performed. We will study collision mechanism, progenitor, and characteristics of host galaxy using observation data of GW source.

KMTNet / 행성과학

[구 KP-01] Survey of Solar System Objects using KMTNet

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Solar system small bodies are unusual objects in astronomical survey data in that they are moving on the celestial sphere. In addition, even in a normal status, their magnitudes are changing over time, firstly because their relative positions with respect to the Sun and Earth are continually changing, secondly because they are rotating bodies with non-spherical shapes. Furthermore, some of them might exhibit unexpected activities, which could be caused by mass ejection or disintegration. Detections and observations of such activities are challenging due to their abrupt nature. Therefore, continuous monitoring observations of large number of Solar system small bodies are required to systematically obtain detailed/transient information about them. Since 2018/2019 winter, we have launched a new project using Korea Microlensing Telescope Network (KMTNet) for detecting such transient phenomena of Solar system objects. Our main goal is to monitor the magnitudes and detect sudden brightness changes. We also plan to discover interesting new objects, and monitor rotational brightness oscillations of asteroids. We intend to monitor the magnitudes of ~ 20,000 known Solar system small bodies per night, and acquire lightcurves of ~ 1,000 asteroids.

[구 KP-02] Ecliptic Survey for Unknown Asteroids with DEEP-South

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Eight hundred thousand asteroids in the solar system have been identified so far under extensive sky surveys. Kilometer to sub-km sized asteroids, however, are still waiting for discovery, and their size and orbital distribution will provide a better understanding of the collisional and dynamical evolution of the solar system.

In order to study the number of asteroids which is detectable with 1.6 m telescope and their orbital distribution, we conducted a small observation campaign as a part of Deep Ecliptic Patrol of the Southern Sky (DEEP-South) project, which is an asteroid survey in the southern hemisphere with Korea Microlensing Telescope Network (KMTNet). We observed the ecliptic plane near opposition (2°x2° field of view centering on α=22h40m31s, δ =-08°22′58″) in August 2018, and identified 464 moving objects by visual inspection.

As a result, 266 of 464 moving objects turn out to be previously unknown asteroids, and their signal to noise ratio is below two on numerous occasions. Most of the newly detected objects are main belt asteroids (MBAs), while three Hildas, one Jupiter trojan, and two Hungarias are also identified. In this meeting, we report the differences in the orbital distributions between the previously known asteroids and newly discovered ones using statistical methods. We also talk about the observational bias of this survey and suggest future works.

[구 KP-03] A Recent Dust Ejection from an Inner Mainbelt Asteroid

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Active asteroids are celestial bodies that distinctively have asteroid-like orbital elements but show comet-like activity. They exhibit the activities due to the sublimation of volatile ices, impacts with small objects or break-up by rapid rotations. As of 2019 February, 30 active asteroids are detected in the outer main belt (i.e., the semimajor axes a>2.5 au) while only 3 of them in the inner main belt (a<2.5 au), suggesting that sublimation of remaining icy volatiles can be one of the most