[EE] Evening Poster | P (Space and Planetary Sciences) | P-PS Planetary Sciences

[P-PS03]Small Bodies in the Solar System: Current Understanding and Future Prospects

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Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
In this session, we welcome presentations regarding small bodies in the Solar System from a variety of approaches (i.e., laboratory experiments, observations, explorations, theoretical modeling, and sample analyses). Especially this year, the Hayabusa2 spacecraft is about to rendezvous with its mission target (Ryugu, C-type asteroid), and ready to make remote-sensing observations for acquiring detailed information of the primordial body. Taking account of the situation, we aim to organize our current understanding of these primordial bodies and further discussing future prospects in this research field.

[PPS03-P05]Flyby observation of Asteroid Phaethon by DESTINY$^+$ onboard cameras

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DESTINY$^+$ (Demonstration and Experiment of Space Technology for INterplanetary voYage, Phaethon fLy-by and dUst Science) is a mission proposed for JAXA/ISAS Epsilon class small program, currently in the pre-project phase (Phase-A) with a launch targeted for 2022. DESTINY$^+$ is a joint mission of technology demonstration and scientific observation. The science mission objectives are (1) to measure physical and chemical properties of cosmic dusts around 1 au and (2) to conduct geological observation of Phaethon upon flyby and analyze dusts nearby Phaethon. Phaethon is known as a parent body of the Geminid meteor shower, the size of which is approximately 6 km in diameter. Phaethon is important as a known source for cosmic dust delivered to the Earth. During the flyby of Phaethon spatially resolved images of Phaethon will be taken by two onboard cameras, the Telescopic CAmera for Phaethon (TCAP) and the Multiband CAmera for Phaethon (MCAP). The relative flyby speed is as high as 33 km/s and the distance at the closest approach is approximately 500 km. The main purposes of the DESTINY$^+$ flyby observation of Phaethon is to understand the geology of a parent body of a meteor shower, and in particular constrain the dust ejection mechanisms from active (i.e., dust-ejecting) asteroids. The specific objectives of the camera observation are taking images for (1) obtaining the light curve of Phaethon in order to estimate the rotational period, (2) measuring the outline shape of Phaeton, (3) making a 3D shape model of Phaethon, (4) observing the surface geological features of Phaethon including dust ejection features, and (5) observing the surface material distribution of Phaethon. The observations (1) to (4) will be conducted by TCAP, and (5) by MCAP. We will explain the flyby imaging sequence of DESTINY$^+$, and show the conceptual designs of TCAP and MCAP.