[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-P24]A Simulation of Mass Determination of Asteroid (469219) 2016 HO3

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An asteroid is an effective indicator of the origin of our primitive solar system and life. The asteroid (469219) 2016 HO3, as the most stable quasi-satellite of Earth for future centuries, is a scientific interesting object due to its special orbit. 2016 HO3 spends about half of the time closer to the Sun than Earth passing ahead of our planet, and about half of the time farther away causing it to fall behind. Its orbit is also tilted a little, causing it to bob up and then down once each year through Earth's orbital plane, resembling a game of leap frog with Earth. This body is one of the potential objects possible to be explored in the first Chinese asteroid mission in 2025. However, the mass of the asteroid, as an important parameter to estimate the bulk density for clues to its internal structure, has not been determined with a high precision so far. In this paper, several simulation cases of radio tracking mode were performed to investigate feasibility of determining its mass based on a designed reasonable trajectory. Accounting for several error sources and estimating configurations, the mass can be determined within 20% accuracy by a least-suqares fit process. This work is implemented by using our own software tools WUDOGS (Wuhan University Deep-space Orbit determination and Gravity recovery System).