[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

convener:Masateru Ishiguro(Department of Physics and Astronomy, Seoul National University), Taishi Nakamoto(Tokyo Institute of Technology), Masahiko Arakawa(神戸大学大学院理学研究科, 共同), Masanao Abe(Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency) 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-P02]Colors of Centaurs observed by the Subaru/Hyper Suprime-Cam

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Centaurs have orbits between Jupiter and Neptune. They are thought to originate from the trans-Neptunian region, but the actual mechanism of delivery into their current orbits is not well known. Also, it is not clear which dynamical group of trans-Neptunian objects (TNOs) are the source of Centaurs. Colors of small solar system bodies obtained by multi-band photometry provide us with clues to their origin and evolution. Comparison between the colors of Centaurs and TNOs would provide constraints on the origin and dynamical evolution of Centaurs. In the present work, we analyzed the imaging data of nine known Centaurs observed by the Hyper Suprime-Cam (HSC) installed at the prime focus of the 8.2-m Subaru Telescope with the g (0.4-0.55 μm) and i (0.7-0.85 μm) band filters by the end of June, 2017. The data we used are those available in the public data archive as well as those obtained by the Hyper Suprime-Cam Subaru Strategic Program (HSC-SSP), which is a three-layered imaging survey using 300 nights with the Subaru Telescope. Using these data, we obtained their g-i colors, and compared with those of TNOs obtained by Terai et al. (2018), who also used the HSC-SSP data. We found that the color distribution of the above nine Centaurs is similar to that of those TNOs with high orbital inclinations (larger than 6 degrees). This suggests that these Centaurs likely originated from TNOs with high orbital inclinations. We also examined correlations between colors and orbital elements for these Centaurs, and found no strong correlations with any orbital elements. This is consistent with the fact that Centaurs have a short dynamical lifetime and their current orbits do not represent their birth places.