[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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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-P13]Shape model reconstruction of Ryugoid using Stereophotoclinometry

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The asteroid exploration mission, Hayabusa2, needs to develop the shape model of 162173 RYUGU, because the shape model helps to control the spacecraft safely and examine the nature of the asteroid. We utilized images of a vertical asteroid Ryugoid generated for a dry-run test of LSS sequence to simulate the real RYUGU, developed its image-based shape model, and evaluated its accuracy from comparing it with the true shape of Ryugoid. Then, we use software called Gaskell’s Stereophotoclinometry (SPC), which develops the shape using stereo imaging and photoclinometry. The former method determines the elevation from the parallax between two or more images. The latter method determines the slope and albedo from the variation in brightness of three or more images. We used a sphere with 450 m in radius as an initial shape and 128 boxA images with a resolution of ~ 2.0 m/pixel, 101 boxC images (0.5-0.7 m/pixel), 220 Mid-Altitude images (~0.5 m/pixel), and additional images to show the southern hemisphere. As a result, we made the shape model of entire Ryugoid. In the presentation, we will show our shape model, its accuracy compared with the true shape, and the time required to develop it.