[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-P26]Correction effect to the dispersion of radiant point in case of low and high velocity meteor showers

*Chie Tsuchiya[1], Mikiya Sato[2], Jun-ichi Watanabe[1] (1.National Astronomical Observatory of Japan, 2.Nippon Meteor Society)

Keywords:meteor, meteor showers, radiant point distribution

There is a large amount of dust in space. The dust (so-called “meteoroid”) collisions with the Earth’s atmosphere at hyper velocity, and a luminous phenomenon known as “meteor”. Although we cannot usually predict which direction a meteor will appear, there are period when some meteors come from one point on the sky called “radiation point”. This activity is a meteor shower. The comet and the asteroid which are considered to be the parent body of the meteor shower, release a lot of dust and produce a dust stream called “dust trail”. It is observed as a meteor shower when this dust trail and the orbit of the earth intersect.

When a meteor is observed simultaneously from two or more observation sites, its orbital elements and radiants, can be derived. The obtained radiant point can be then plotted in the celestial sphere map. Meteor showers are recognized from the concentration of their radiant distribution on the celestial sphere map, and their similar speeds. The derived radiant points of meteors that belong to the same meteor shower tend to concentrate at similar times and with similar speeds. In many cases such a concentration can be easily recognized by visual inspection.

It has been pointed out that there is difference in the dispersion of the radiation point distribution every meteor shower that the dispersion of the radiants depends on the velocity of and the spread in velocities between individual stream meteoroids. Distribution of the meteoroid belonging in the dust trail is generally wider for older meteor showers and narrower for young meteor showers. That dispersion includes the zenithal attraction and observational error. Furthermore, one of the most important factor is the geocentric velocity of meteor showers. It has been pointed out that the dispersion is partially dependent on the geocentric velocity of the meteor showers. In case of the dispersion becomes too large to be recognized as meteor showers, there is a possibility for us to overlook activity.

Sato &Watanabe (2014) indicated that the correction of the Earth’s motion is effective for recognizing meteor showers in the plot of the radiant points. In this study, the technique applied to detect low and high velocity meteor shower. The validity of the correction to Phoenicids of the low velocity meteor showers is confirmed as shown in figures. The correction clearly makes the dispersion smaller than uncorrected plot. On the other hand, in case of high velocity meteor showers the dispersion seems to be larger, while the two groups of the concentrated radiant points are recognized in the plot. This correction should be valid for separating the complex meteor showers.