

Numerical simulation on the albedo of rough surfaces

*Hiroki Senshu¹, Tomokatsu Morota², Yasuhiro Yokota³, Naoya Sakatani⁴

1. Chiba Institute of Technology, 2. Nagoya University, 3. Kochi University, 4. Meiji university

The bond albedo, or energy reflectance, is one of the most important physical parameters because it decides the thermal evolution of the surface. However the bond albedo could change with the roughness of the surface. Although the Hapke's parameter is often introduced to represent the effect of roughness on the phase function, the parameter is not straightforward.

We developed a new numerical model to simulate the image of a rough surface and by using the model calculated the bond albedo of the rough surface.

According to our model, even for the case with Lambertian polygons the bulk bond albedo depends not only on the roughness of the surface but also on the solar incident angle, because of heterogeneous distribution of irradiated area. In this presentation we will propose a new equation to calculate the bond albedo of a rough surface.

Keywords: albedo, rough surface, thermal evolution