[구SO-15] Vertical Structure of the Interplanetary Dust Cloud

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A new inversion method has been developed to determine the vertical density structure for the interplanetary dust cloud. Contrary to the previous methodology, with this method we don't need to employ any functional forms for the vertical density profile; one can directly derive the density profile from the observed zodiacal light brightness profile along the great circle at solar elongation 90°. We have applied our new method to the recently deduced distribution of the scattered zodiacal light from ground-based night sky observations (Kwon et al. 2004), and also to the zodiacal thermal emission profiles observed from space by IRAS and COBE/DIRBE. We are currently analyzing the AKARI observations as well. Our results will be compared with both the cosine model of Rittich (1986) and the numerical model by Kelsall et al. (1998). We will interpret our density profile in viewpoints of the meteoroid population model of Divine (1993) and of the possible existence of isotropic component in the interplanetary dust cloud.

[구SO-16] Near-Infrared Zodiacal Light Brightness at the AKARI NEP Monitoring Field

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From June 2006 till the liquid He exhaustion on August 2007, the AKARI regularly observed the north ecliptic pole (NEP) monitoring field with all her nine photometric bands, which covernear- (NIR) and mid-infrared (MIR) wavelength range. Earth orbit is eccentric, the maximum density plane of the interplanetary dust (IPD) cloud is slightly tilted with respect to the ecliptic, and the IPD cloud itself is not precisely centered at the Sun.These all make the observed NEP brightness exhibit sinusoidal modulations with time of observations or Earth's longitude. A simple model of IPD cloud is assumed to locate the symmetry plane with respect to the ecliptic by fitting the synthesized seasonal modulation to the observed.

We have analyzed, so far, the NEP monitoring observations in NIR and fixed parameters of the maximum density plane. Employing these pieces of information along with the vertical density profile recently deduced by our new inversion method, we will evaluate the brightness integrals for both the scattering zodiacal light and the zodiacal emission, and isolate the zodiacal component from the observed NEP brightness.

This work is based on observations with AKARI, a JAXA project with the participation of ESA.