

## Vertical Structure of the Circumsolar Dust Ring

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The Earth's orbit is now known to be embedded in the circumsolar dust ring. But we have no information on its vertical structure. The dis-alignment of the zodiacal light symmetry plane with respect to the ecliptic suggests possible effect of Jupiter on the three dimensional distribution of interplanetary dusts (IPDs) in general. In this sense Jupiter may affect the vertical structure of the dust ring too. To check roles played by Jupiter on the IPD ring dynamics we have simulated the orbital evolution of asteroidal debris by using direct integration of the equation of motion.

In the Solar system IPDs are subject to not only Solar and planetary gravitational forces but also radiative pressure, Poynting-Robertson and solar wind drags. Due to the drag forces, IPDs originated from the asteroidal belt spiral in towards the Sun. While passing the terrestrial planets, the mean motion resonances may occur for some dusts so that they can stay for a long time in the orbits corresponding to period commensurability with the Earth. In this way the Earth has acquired circumsolar dust ring along its orbit (Jackson and Zook, 1989). The asymmetry arisen from the drag-driven mean motion resonance was confirmed in the distribution of the zodiacal emission observed by the IRAS (Dermott et al., 1994).

This paper aims to reveal the vertical structure of the dust ring in the mean motion resonance with the Earth. The simulation results can be confirmed by observing the zodiacal emission onboard the infrared satellite ASTRO-F soon to be launched. If confirmed, they will provide us with a means to check the assumption that the inclination of the symmetry plane of the zodiacal light is controlled by the gravitational perturbation of Jupiter.