

Special Issue on Light Scattering in the Solar System and Earth-Like Exoplanets

Call for Papers

Light scattering by planetary atmospheric particles and surface materials plays a fundamental role in the study of remote planetary objects. Reflected electromagnetic radiation by planets, asteroids, comets, satellites, rings, and interplanetary dust particles provides very rich information about the nature of scattering objects by its angular distribution, spectral energy density, and polarization status altered from the incoming light. Understanding the interrelations between the characteristics of the scattered and thermally reemitted electromagnetic radiation and the physical and chemical properties of target particles/surfaces will considerably improve our knowledge on the present surface conditions and the evolutions of planetary objects. Light scattering analysis techniques are also important in searching for and characterizing extrasolar planets. Sun (star) glint and other Earth-like photometric and spectroscopic characterizations may help us to better detect extrasolar planets with oceans and atmospheres.

We welcome original research and review articles to stimulate our continuing efforts towards understanding the light scattering mechanism and probing planetary objects with this technique. We are particularly interested in articles presenting new measurements of planetary objects from space missions, including the Moon (LRO, Kaguya, M3, Chang'E, etc.), asteroids (Dawn, Hayabusa and Rosetta asteroid flybys, etc.), comets (Stardust-NExT, EPOXI), Saturnian rings and satellites (Cassini), and exoplanets (EPOXI); new insights about the mechanisms of the opposition effects; new methods to characterize space weathering effects in atmosphereless bodies; new theory of radiative transfer and electromagnetic scattering; and advances in photometric and polarimetric techniques. Potential topics include, but are not limited to:

- Visible and near infrared spectrophotometric and polarimetric observations of planets, asteroids, comets, satellites, rings, and interplanetary particles
- Laboratory measurements of light scattering including polarimetry by small particles and implications in remote observations of planetary objects
- Advances in polarimetric detection of planetary atmospheres and surfaces

- Opposition effect and negative polarization of atmosphereless bodies
- Advances in light scattering theories
- Sun glint and other optical characterizations of Earth-like exoplanets

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