

CONSTRUCTING THE ZODIACAL CLOUD

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Modeling the interplanetary dust cloud has long involved inversion techniques on zodiacal light measurements to determine parametric model components. This contemplates the cloud as something relatively homogeneous, but provided important insights into its distribution and the properties of some of its smallest components scattering visible light. Since the discovery of actual dust production sources by the Infrared Astronomical Satellite, their subsequent observations by other spacebased infrared telescopes, increasingly sensitive and extensive in-situ measurements and sophisticated modeling of the dynamical evolution of dust, the zodiacal cloud can be viewed as the superposition of a number of components of different origins and processes, each of which is subject to focused investigation. These include dust production from the recent collisional disruption of asteroids, the emission of large refractory particles from comets, material arising from collisional processes in the Kuiper Belt and the interloping particles from outside the solar system. This does not necessarily provide a complete picture - there may be evidence of as yet unidentified dust production processes as these components are put back together in an attempt to explain observations of the whole. The study of the modern production of dust in our own solar system provides insight into a variety of evolutionary processes, as well as provides models for the production of dust around other stars.