

The Submillimeter Continuum of Cometary Dust

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Comets are perhaps the least altered building blocks from the early solar nebula and hold important clues to the main chemical and physical processes of that period. Cometary dust probably consists of both presolar particles and solids condensed from the solar nebula. Dust properties (i.e. structure and mineralogy) reflect the extent of mixing of material between the warm inner regions and cold outer regions of the nebula at the time of comet formation.

The apparition of comet C/2011 L4, one of the brightest in the last two decades, provides an unique opportunity to study a dynamically new comet in unprecedented detail. We imaged the dust coma of C/2011 L4 using the new SCUBA-2 camera at the James Clerk Maxwell Telescope and simultaneously detected the dust emission at 450 μm and 850 μm . Our submillimeter observations are sensitive to large dust particles similar to grains in extrasolar circumstellar dust disks. In this talk we will present the long-wavelength observations of three comets with a special focus on the comet C/2011 L4. We will discuss the implications of our derived mass loss rates and how cometary dust is related to its precursor materials in the solar accretion disk.