

Solar System Science with ALMA

Bryan J. Butler (NRAO Socorro), Mark A. Gurwell (Center for Astrophysics)

Observations of solar system bodies with the ALMA array will undoubtedly allow significant progress to be made on our understanding of the individual bodies therein, their interactions, and possibly their formation. With its fantastic resolution, sensitivity, and speed, ALMA will be one of the most important ground based observatories for planetary science. While it is nearly impossible to predict what will be learned about the solar system and its bodies, we can predict some general areas where we expect that ALMA will make significant contributions. We will concentrate here on 2 such areas: observations of small bodies, and observations of the solid surfaces of the larger bodies.

Small bodies. Observations of comets will help disentangle the story of their formation and history, and shed light on the physical processes occurring in their atmospheres. Observations of NEAs by ALMA will contribute to knowledge of their properties and orbits (ALMA can observe in daytime). Observations of KBOs will help to determine their properties and origin.

Larger bodies. We imagine that observations of Mercury, Mars, the larger asteroids, the moons of Jupiter, Saturn, Uranus, and Neptune, and the Pluto/Charon will be undertaken to determine properties and physical processes of their surfaces and subsurfaces.

Abstract submitted for Science with the Atacama Large Millimeter Array, 6 – 8 October 1999, Washington, D. C.