Radio Science

Radio Science (University of Colorado) plays several key roles in determining the environment on, within, and about the asteroid. Radio Science reveals the mass, gravity field, internal structure, and surface acceleration distribution. Analysis of the dynamical environment about the nominal asteroid model, determination of the asteroid gravity field, mapping the gravity field to the surface of the asteroid, and using this information for probing the internal structure and mass distribution within the body.

The asteroid mass and gravity field coefficients will be determined during two main mission periods. First, upon arrival

the spacecraft will undertake a few slow hyperbolic flybys of the asteroid to determine the total mass and detect the lower

degree and order gravity coefficients. Later in the mission there is a period of low, near-polar orbits dedicated to determining the asteroid spherical harmonic gravity field coefficients. Analysis shows that these should be detectable up to fourth degree and order, at least.