



The Gravity and Rotation Models of Vesta from the Dawn Mission

Sami Asmar (1), Alex Konopliv (1), Ryan Park (1), Bruce Bills (1), Robert Gaskell (2), Carol Raymond (1),
Maria Zuber (3), David Smith (3), Chris Russell (4), and Nicolas Rambaux (5)

(1) California Institute of Technology, Jet Propulsion Laboratory, Pasadena, United States (sami.asmar@jpl.nasa.gov), (2) PSI, Tucson, AZ, USA, (3) Massachusetts Institute of Technology, Cambridge, MA 02129, USA., (4) University of California, Los Angeles, (5) IMCCE, France

The Dawn spacecraft has observed asteroid Vesta from July 2011 to August 2012 and provided Doppler tracking data for gravitational field measurement via the Deep Space Network. Additional data included optical imaging from which a shape model was derived. By processing the radiometric tracking and optical imaging data, a 20x20 gravity field and a highly accurate rotation model are computed. The measured gravity field is then compared with a three- [U+2010] layer model of Vesta and the corresponding Bouguer gravity anomaly is presented. The inertial spin pole direction is determined to better than 0.0001 degrees and the rotation rate accuracy has been improved by a factor of 100. Interpretations for the interior structure are presented.