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Galilean Moons Internal Dissipation from their Tidal Orbital Accelerations and Implication on their Internal Structure

VALERY LAINEY[1], OZGUR KARATEKIN[1], VERONIQUE DEHANT[1]

[1] *Royal Observatory of Belgium*

The precise quantification of the orbital tidal acceleration of the moons orbiting around Jupiter is a keypoint to their internal structure knowledge. As the internal dissipation depends on radial profiles of rigidity, viscosity, and density, the astronomical observations of tidal acceleration eventually yield important constraints on internal structure of the Galilean satellites as well as on the dissipation inside Jupiter. Using a new dynamical model (Lainey et al.2006), we have directly introduced the tidal effects during the fit to the observations. Tides raised on the satellites as well as tides raised by each moon on Jupiter have been modeled. This method will allows us to determine precisely the dissipation mainly inside Io and Jupiter.