



Mars interior models

A. Rivoldini (1), O. Verhoeven (2), T. Van Hoolst (1), A. Mocquet (2), G. Choblet (2), M. Menvielle (3), P. Vacher (2), V. Dehant (1)

(1) Royal Observatory of Belgium, Bruxelles; (2) Laboratoire de Planetologie et Geodynamique, Universite de Nantes, France; (3) CETP, Observatoire de Saint-Maur, Universite Paris-Sud, France

We propose a set of spherically symmetric models of the Martian interior that satisfy geodetic measurements and cosmo-chemical constraints. The planetary models consist of a crust, parameterized by its mean density and thickness, a mantle with variable mineralogy, dependent on pressure and temperature, and a partially fluid core composed of iron and sulfur. The crust thickness and density, the location of the core mantle boundary, the size and state of the inner-core and the concentration of sulfur in the core are adjusted to agree with the total mass, mean moment of inertia and with specific bulk Fe/Si ratios. For given mineralogical mantle models and core compositions we also investigate the resulting constraints on the mantle temperature profile.