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Problems of the lunar internal structure and gravitational field of cosmic missions

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Abstract

© 2016, American Institute of Aeronautics and Astronautics Inc, AIAA. All rights reserved. The article is devoted to the problems of the internal structure and gravitational field of the Moon. There are some essential arguments in favor of existence of a small-sized Moon's core made of metallic iron alloyed with a small amount of sulfur and/or oxygen, and availability of hot viscous lower mantle. Structure of gravitational field of the Moon, determined by the comparison of high-precision trajectory measurements by «Lunar Prospector» with the results of laser altimetry obtained by «Clementine», as well as with data sets of laser ranging of the Moon, assumes the presence of a metal core. Interpretation of the polar moment value within the framework of chemical, thermal and density models of lunar crust and mantle informed conclusions about the weight and size of the core.
