

# The method for celestial bodies' center of mass position relative to their figures determination on the basis of harmonic analysis of the expansion in spherical functions in order to refine the physical libration parameters

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## Abstract

© Published under licence by IOP Publishing Ltd. In this paper the problem of the lunar center of mass relative to the center of its figure determination on the basis of space observations is considered, since the Moon is the most studied celestial object and there is a complete database on it. The future prospects for lunar laser ranging and radio interferometry require development of adequate theoretical support for modern technologies. The aim of these studies is the distances' measurement between the Moon and the Earth with an accuracy of 1 mm. Thus, determination of the lunar center of mass position, represented in this paper, and development of the selenocentric system will allow to solve the above mentioned problem more accurately and reliably. The new values of the lunar center of mass relative to its center of figure in orthogonal selenographic coordinate system  $\Delta\xi$ ,  $\Delta\eta$ ,  $\Delta\zeta$  have been determined; they are: -1.75, -0.75, 0.11 km respectively.

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