JGSP **59** (2021) 67–99

JOURNAL OF
Geometry and Symmetry in Physics
ISSN 1312-5192

ON A NEW ANALYTIC THEORY OF THE MOON'S MOTION III: FURTHER CORRECTIONS

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Communicated by Charles-Michel Marle

Abstract. Further corrections to the analytic theory of the lunar motion deduced from the first-order approximation to the Lagrange equations of the Sun-Earth-Moon system expressed in relative coordinates and accelerations are evaluated. Those terms arising from the second-order approximation, the planetary perturbations and Earth's spheroidal shape are calculated and bounded, all of them being very small. Finally, Earth's gravitational parameter is calculated from gravity data finding a value slightly higher than that provided by Jet Propulsion Laboratory.

MSC: 70F10, 86A30
Keywords: Earth's mass, Earth's spheroid, four-body problem, gravity, lunar motion, Moon, perigee precession, planetary perturbations, reference ellipsoid

Contents

doi: 10.7546/jgsp-59-2021-67-99