

The software complex for computer simulating the observation of stars from the lunar surface and calculating their selenographical coordinates

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Abstract

© SGEM2017. All Rights Reserved. Appointment of the software system is the solving the direct and inverse problem of the lunar physical libration. The direct problem is to calculate the selenographic coordinates of stars falling within the field of view of the telescope mounted on one of the lunar poles. The analytic theory of the physical libration of the Moon of Petrova N. [1] provides the base for the solution of the problem. The inverse problem is to determine the parameters of lunar physical libration based on the simulated "observable" selenographic coordinates of stars. In the development of software system, the modern methods of structural and object-oriented programming are applied using properties and methods of Excel - workbooks, sheets, cells and charts. The software package includes several Excel workbooks, interconnected by means of program modules written in the VBA. The Excel books form a kind of database, which provides the solving of both problems by necessary information. The software package allows analyzing the trajectories of stars in future observations, as well as testing the sensitivity of the selenographic coordinates to the parameters of the internal structure of the Moon.

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Keywords

Lunar physical libration, Lunar polar telescope, Stellar selenographic coordinates

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