

The fractal method for analysis of macro models of the celestial bodies surface

Andreev A., Demina N., Demin S., Nefedyev Y., Churkin K.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016, Education and Upbringing Publishing. All rights reserved. In case of building a model of physical surface of celestial body scientists are dealing with a system of parameters whose precision depends on an order of spherical functions series expansion. For significant precision a complicated figure forms and it is almost impossible to describe that with the classical approach. Thereby conducting a comparative analysis of the classical models built on the basis of various observations is quite complicated. The aim of this work is to apply a fractal analysis for topographic and selenographic models investigation. The approach based on fractal similarity of physical structures was used for classical models and models of the librational zone of the Moon, that had been built by expansion in a series of spherical functions in the dynamical coordinate system. As a result, the fractal dimensions of the librational zone of the Moon determined for the mentioned models at various angles have been obtained.

Keywords

Fractal and harmonic analysis, Images processing, Models of the librational zone of the moon, Physical surface models