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# 国台学术报告 NAOC COLLOQUIUM

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**Time: Wednesday 2:30PM, Sep. 24 Location: A601 NAOC**

## Lunar Physical Libration & Interior Structure: Theoretical Model & Observation

**Prof. Alexander Gusev (Kazan Federal University)**



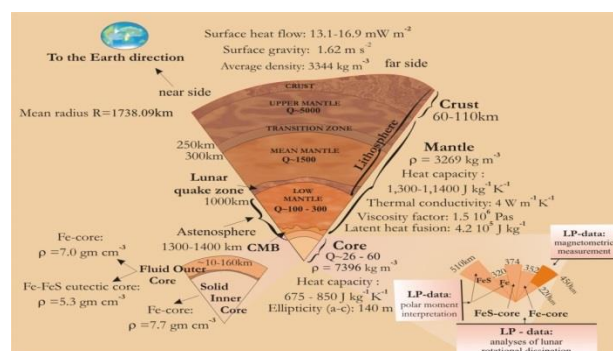
Dr. Alexander Gusev received BS degree in Physics, Dept. of General Relativity and Gravitation from Kazan state university (KSU) in 1976, and PhD in Theoretical and Mathematics Physics from Moscow state university in 1981. From 1979 to 1992, he was Research Scientist, a Lecturer, a Senior Lecturer, and Associate Professor at the Dept. of Astronomy, Physics Institute, KSU. In 1991 - 2001 he was Senior Scientist, Gravitational-Wave Astronomy Laboratory, KSU. Now he has Senior Scientist, Associated Professor, Dept. of Geophysics, Kazan Federal University (KFU). In 2009 to present time he is Vice-Director

on international cooperation of Engelhardt Astronomical Observatory, KFU, Russia. His scientific topics include problem of the rotation, physical libration and interior structure of the two/three layers Moon, spin-orbital evolution of extra-solar planets and pulsars. He is the author of four books on celestial mechanics, astronomy and astrophysics (Russian).

### Abstract

Our present knowledge of the interior structure of the Moon will be reviewed. The emphasis will put on the evidences of lunar core existence and on the lunar librations theory. Our goal is to show how the millisecond precision observations of lunar physical librations in the project Change-3/4 and Luna-Glob-Resource missions may be used for

determining the parameters of liquid and solid core of the Moon. We discuss geophysical parameters, geometrical and dynamic ellipticity of liquid core and viscose-elastic mantle of the multi-layer Moon. The given characteristics are important for the evaluation of free librations of the Moon's layers – Chandler Wobble (CW), Free Core Nutation (FCN), Inner Core Wobble (ICW), Free Inner Core Nutation (FICN).



*All are welcome! Tea, coffee, biscuits will be served at 2:15 P.M.*