

P. N. LEBEDEV PHYSICAL INSTITUTE OF
THE RUSSIAN ACADEMY OF SCIENCES



PRESENTATIONS

of 19th International Symposium on Very High Energy Cosmic Ray Interactions – ISVHECRI 2016

Abstracts



The Symposium is carried out under the
auspices of ***the International Union of Pure
and Applied Physics (IUPAP)***

with the financial, material and technical support
from:



- ***the Federal Agency for Scientific Organizations (FASO);***
- ***the P.N. Lebedev Physical Institute of the Russian Academy of Sciences (LPI RAS);***
- ***the Russian Foundation for Basic Research (RFBR).***

22 – 27 August 2016

Moscow, Russia

Particles spectra and mass composition in the ultra-high energy region in the framework of the Galactic origin of the cosmic rays

A.A. Lagutin¹, N.V. Volkov¹, R.I. Raikin¹, A.G. Tyumentsev¹

¹*Altai State University, Barnaul, Russia*

Abstract

We examine the possibility for self-consistent description of all the basic features of the observed cosmic ray spectrum in the energy range of $10^{10} \div 10^{20}$ eV within the Galactic origin scenario.

We assume the existence of Galactic sources that accelerate particles up to $\sim 10^{20}$ eV and take into account highly inhomogeneous (fractal-like) distribution of matter and magnetic fields in the Galaxy that leads to extremely large free paths of particles («Levy flights»), along with large contribution to the cosmic ray fluxes observed above $\sim 10^{18}$ eV from particles reaching the Solar System without scattering. The crucial model predictions for the particles spectra and mass composition behavior in the ultra-high energy region are presented.

This work was supported in part by the Russian Foundation for Basic Research grant No. 16-02-01103 a.