

7. DEPARTMENT OF COSMIC RADIATION PHYSICS

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Overview

The Department of Cosmic Ray Physics in Łódź is involved in basic research in the area of high energy physics and cosmic ray physics related to:

- Studies of asymptotic properties of hadronic interactions based on the analysis of cosmic ray propagation in the atmosphere.
- Studies of the structure and properties of Extensive Air Showers induced by cosmic ray particles.
- Search for point sources of high energy cosmic rays.
- Studies of cosmic ray propagation in the Galaxy and mechanisms of particle acceleration.
- Studies of mass composition of cosmic rays in the energy range 10^{15} - 10^{17} eV.

Theoretical and experimental studies of nuclear interactions for energies exceeding those obtained by modern particle accelerators are performed based on the results obtained by the Łódź Extensive Air Shower Array. The Łódź hodoscope can register the electromagnetic component of cosmic ray showers developing in the atmosphere as well as muons of two energy thresholds.

Data collected by the Łódź array are also used to study the mass composition of cosmic rays in the energy range 10^{15} - 10^{17} eV.

The Łódź group collaborates with many foreign institutes and laboratories in construction and data interpretation of cosmic ray experiments.

Our most important partners are: Forschungszentrum Karlsruhe (Germany), Collège de France, the Institute for Nuclear Studies of the Russian Academy of Science, the University of Perpignan (France) and Uppsala University (Sweden).