

7 DEPARTMENT OF COSMIC RAY PHYSICS

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Overview

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 through the atmosphere.

Experimental and phenomenological studies of Extensive Air Showers induced by cosmic ray particles.

Search for high-energy cosmic ray point sources.

Studies of cosmic ray propagation in the Galaxy and particle acceleration mechanisms.

Studies of mass composition of cosmic rays in the energy range 10^{15} - 10^{17} eV.

Theoretical and experimental studies of Extensive Air Shower properties are performed mainly on the basis of the results obtained by the Łódź Extensive Air Shower Array. We have analysed nearly 100,000 events of energies above 10^{15} eV registered in the Łódź hodoscope. We have developed a method to verify different models of cosmic ray mass composition.

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 in Karlsruhe (Germany), Collège de France, Institute for Nuclear Studies of the Russian Academy of Sciences and Uppsala University (Sweden).

Jacek Szabelski