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4. High energy cosmic rays (HE-CR I)

First experimental results of WILLI-EAS detection system

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The measurements of the muon charge ratio in individual EAS can bring useful information on the mass of the primary particle that initiate the shower or on the hadronic interactions that govern the propagation through the atmosphere. For this purpose, the WILLI-EAS detection system, consisting of a mini-array, for the identification of the EAS, placed in coincidence with the WILLI calorimeter, for charge ratio measurements, was built and is in operation at IFIN-HH, Bucharest.

The array consists of 12 scintillator detector stations of approximately 1 m² each and is designed to measure the charged particle component of the extensive air showers in the 10¹³-10¹⁵ eV primary energy range. Preliminary experimental results show a good reconstruction for parameters like shower core, arrival direction and lateral distribution. Presently the possibility to extend the array with another 12 stations to increase the quality of the reconstruction is under investigation.