

The HERD experiment: beyond the current energy limits in direct detection of cosmic rays

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The HERD (High Energy cosmic-Radiation Detection facility) experiment is a future experiment for the direct detection of high energy cosmic rays that will be installed on the Chinese space station in 2027. It is constituted by an innovative calorimeter made of about 7500 LYSO scintillating crystals assembled in a spheroidal shape and it is surrounded on five faces by multiple sub-detectors, in order to detect particles entering from five sides.

It will extend direct measurements of cosmic rays of more than one order of magnitude in energy, measuring proton and nuclei fluxes up to the PeV/nucleon energy region, performing the first direct measurement of the cosmic proton and helium knee. HERD will also measure the high energy electron+positron flux and high energy photon flux to search for possible indirect signals of dark matter and perform multi-messenger astronomy.

In this talk the HERD experiment, its scientific goals and its detector design will be introduced.

Alternate track

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