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Observation of a knee in the p+He energy spectrum below 1 PeV by using an hybrid measurement with ARGO-YBJ and a LHAASO Cherenkov Telescope

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The measurement of cosmic ray energy spectra, in particular for individual species, is an essential approach in finding their origin. Locating the "knees"of the spectra is an important part of the approach and has yet to be achieved. Here we report a measurement of the mixed Hydrogen and Helium spectrum using the combination of the ARGO-YBJ experiment and of a prototype Cherenkov telescope for the LHAASO experiment. A knee feature at 640+/- 87 TeV, with a clear steepening of the spectrum, is observed. This in agreement with other two independent analysis of ARGO-YBJ data, and provides new important inputs to acceleration/propagation models for galactic cosmic rays.

Collaboration

LHAASO

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