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## Probing the pseudorapidity region $\eta > 7$ with the ARGO - YBJ detector

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By means of the analog readout, the ARGO-YBJ experiment is able to image the very hot region of the shower core up to particle density of many  $10^4/\text{m}^2$ . Exploiting this feature the number of particles within 10 m from the core and the local age have been carefully studied. This cascade region is mainly developed from particles produced in the first interactions with pseudorapidity  $\eta > 7$ , an angular region still out of the reach of the accelerator experiments. We find a systematic shift of the measure

d local age by  $\sim 0.15-0.20$  with respect to the MC expectation, by assuming primary fluxes and composition as given by the Hoerandel model and hadronic interactions as described by QGSJET2. This effect cannot be taken into account by any instrumental effect neither by reconstruction biases. Possible explanations of this result involve both the features of the hadronic interaction as well as the elemental composition of the primary cosmic rays in the energy range between 50 TeV and 5 PeV.

### Collaboration

ARGO-YBJ

### Registration number following "ICRC2015-I"

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