

# Probing hadronic interactions using the latest data from the Pierre Auger Observatory

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Ultra-high-energy cosmic rays are a unique probe for studying hadronic interactions at the  $\sqrt{s} \sim 100$  TeV scale. The Pierre Auger Observatory, the world's largest cosmic ray detector ever built, has gathered unprecedented statistics about the highest energetic particles in the Universe. Our results point to inconsistencies in hadronic interaction models, namely, a deficit in simulations of the muon content of air showers. Recently, we developed a novel approach in which an overall shift in the depth of the maximum of air-shower profiles and a 15 - 25% increase of the predicted hadronic signal provide a better description of our data. In this contribution, we present our results based on the Auger Phase I data and prospects for the Phase II dataset using AugerPrime, from which an enhanced measurement of the muon and electromagnetic shower content, also near the shower core, are made available by the installation of new detectors.

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