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First result of the proton-air cross section of the Telescope Array experiment.

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In this work we report on the measurement of the proton-air inelastic cross section σ_{p-air}^{inel} using data collected by the Telescope Array (TA) detector. Based on the measurement of σ_{p-air}^{inel} , the proton-proton cross section σ_{p-p} is subsequently inferred using the Glauber Formalism and the QCD-inspired fit of Block, Halzen and Stanev, at a center of mass energy of 95 TeV. The use of cosmic ray events at ultra high energies enables the measurement of this fundamental quantity at energies currently inaccessible with particle accelerators. The data used in this report was collected over five years using hybrid events from the TA Middle Drum fluorescence detector as well as the TA surface detector array.

Collaboration

Telescope Array

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Author: Dr ABBASI, Rasha (University of Utah)**Presenter:** Dr ABBASI, Rasha (University of Utah)**Session Classification:** Parallel CR14 Hadr Int**Track Classification:** CR-EX