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Composition Measurements via Depth of Airshower Maximum at the Telescope Array

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The chemical composition of ultrahigh energy cosmic rays (UHECR) is studied primarily through observations of the depth of airshower maximum (Xmax), as seen by nitrogen fluorescence telescopes. The Telescope Array (TA) observatory measures Xmax using both stereo fluorescence detectors and fluorescence/ground array hybrid detection to accurately determine extensive air shower geometry. We compare the resulting Xmax distributions to those predicted by air shower Monte Carlo simulations, by generating events and analyzing them with the same reconstruction program and event quality cuts as used in the data. In this talk, we present a summary of all TA Xmax measurements and discuss their implications for the chemical composition of UHECR.

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