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Measurements of the first two moments of the depth of shower maximum over nearly three decades of energy, combining data from the standard Pierre Auger fluorescence detector and the High Elevation Fluorescence Telescopes

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For the first time the Pierre Auger Collaboration presents $\langle X_{\max} \rangle$ and $\sigma(X_{\max})$ measurements covering nearly three decades of energy. In this analysis we include new X_{\max} data obtained with the Pierre Auger High Elevation Fluorescence Telescopes (HEAT) enhancement. The HEAT telescopes cover a field of view ranging from 30° to 60° of elevation and are located next to one of the standard fluorescence detector sites (Coihueco). The combination of the HEAT and Coihueco telescopes covers a field of view from $\sim 2^\circ$ up to $\sim 60^\circ$ of elevation. Thus, they can sample the atmospheric longitudinal profile of nearby lower energy showers allowing us to extend the energy range down to 10^{17} eV.

Collaboration

Pierre Auger

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