

Search for upward-going showers with the Pierre Auger Observatory

Motivated by the ANITA report of pulses compatible with upward-going extensive air showers, we present a recent search for such showers with the Pierre Auger Observatory. The data set registered using the fluorescence detector of the Observatory is scanned to identify showers ascending from the ground. Consistently with the exit angles reported from the first and third ANITA flights, we focus on shower geometries that are not compatible with the Standard Model interactions of neutrinos in the Earth. We provide the effective area of the Observatory to generic upward-going showers as a function of shower energy and altitude that can be used to constrain predictions based on physics beyond Standard Model and the upgoing-shower interpretation of the ANITA results. To demonstrate this method, we calculate limits on the production rate of tau leptons near the ground emerging under the investigated exit angles.

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