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Energy estimation of atmosphere-skimming cosmic ray events using the radio technique

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Cosmic rays can induce extensive air showers whose development takes place entirely inside the atmosphere, without reaching the ground. These atmosphere-skimming events have been detected with balloon-borne experiments such as ANITA and EUSO-SPB2. In this work, we evaluate the possibility of estimating the energy of an atmosphere-skimming cosmic ray shower through measurements of radio pulses. We report on the performance of an energy reconstruction method which adapts existing algorithms to the peculiar characteristics of atmosphere-skimming events, and study its accuracy for different event geometries, and in different scenarios of angular resolution and signal-to-noise ratio.

Collaboration(s)

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