

Looking for long-range correlations among the EEE telescopes

Friday 16 July 2021 19:18 (12 minutes)

The search for long-range correlations among air showers is one of the main goal of the Extreme Energy Events (EEE) Project. The existence of such events has only been supposed theoretically through several physical mechanisms, the most convincing being the so-called GZ effect, based on the photodisintegration of a heavy primary nucleus in the solar field. Even with a large detector coverage current rate expectations are of few events per year.

To measure time correlations among distant air showers, sparse arrays of detection stations spread over large areas are needed. A very limited number of experimental setups can perform this measurement and few experimental results have been reported over the past years.

Started in 2006 the EEE project is a network of 61 cosmic muons tracking telescopes made by 3 wide area MRPCs, sensitive to the direction of incident charged cosmic particles. The telescopes are distributed over the whole Italian territory, thus making the EEE array an ideal tool for the detection of long-range time correlations between extensive air showers.

I will describe the analysis strategies adopted to search for such rare correlation events, together with the results obtained analysing the full statistics collected by the EEE telescopes in 10 years of operations.

Keywords

long-range correlations; GZ effect; sparse array; MRPC telescope;

Collaboration

other (fill field below)

other Collaboration

EEE (Extreme Energy Events)

Subcategory

Experimental Results

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Session Classification: Discussion

Track Classification: Scientific Field: CRI | Cosmic Ray Indirect