

Studies on ELVES at the AUGER Observatory

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The Pierre Auger Observatory near Malargue (Argentina), is the largest facility (3000 km²) for the study of Ultra High Energy Cosmic Rays ($E > 10^{18}$ eV). The four sites of the Fluorescence Detector (FD), covering a field of view of 30x180 degrees) observe the night sky with 100 ns time resolution and a space resolution of about 1 degree. After the first serendipitous observation of an ELVES event, in May 2005, the Observatory has decided to develop strategies to improve the selection of these events.

Since March 2013, a special trigger has been implemented, to detect ELVES, whose topology (a rapidly evolving ring) is quite different from the one of cosmic ray events. This allows to record events with high efficiency and unprecedented accuracy. A large fraction of the events taken so far with this special trigger are simultaneously observed by two (stereo) or three (triplet) FD sites. This allows to further improve the determination of the altitude of light emission, and to get more insight on the structures observed in the analog signals. Comparison with the WWLLN data will be discussed, together with prospects to further improve the ELVES triggering and buffering properties.

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