

Multiple ELVES and more TLEs at the Pierre Auger Observatory

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In the last ten years, the Pierre Auger Observatory has exploited a dedicated trigger and extended readout, and its very high time resolution, to record the world's largest sample of multiple ELVES. By comparing the time gaps between flashes with waveforms recorded by the antennas of the ENTLN network, we observe the correlation expected by models for what concerns double ELVES. On the contrary, using a large sample of triple ELVES, from four different thunderstorms, we refute the ground reflection mechanism.

In the same data sample, we could observe another type of TLE, the halo, a few hundred microseconds after some ELVES. This has motivated the installation, in December 2023, of new cameras, to complement the observations done with our Fluorescence Detector. Preliminary results, including the first observation of SPRITES in Auger, will be shown.

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