



Contribution ID : 21

Type : **Poster**

Tachyons in EAS's?

Monday, 9 July 2007 14:45 (0:00)

Abstract content

“Delayed” EAS with $N_e > 5 \cdot 10^6$ particles are registered. It were detected 2117 showers with number of particles above 10^7 , in 98 from these events “delayed” EAS with $N_e > 5 \cdot 10^6$ particles were detected. Impulse delay for the time from 40 up to 600 ns was registered. In 14 events delayed impulses were registered in 2 and more detectors and in 3 events - in 4 detectors. Average delay between detected pair of showers is 109 ± 6 ns. The expected number of simultaneous registration of accidental small local showers by 4 detectors is 0,009722 compared to 3 detected (30 sigma). It is shown that delayed EAS can't be explain by secondary interaction deep in the atmosphere. To ensure the shower time delay $\Delta t \sim 10^{-7}$ s received in the experiment at crossing EAS the atmosphere, the value of $\gamma = E/mc^2$ should be in the interval 10-30. The energy of delayed shower $E \sim (1-2) \cdot 10^7$ GeV. It follows from here that the mass of generated particle (or pair of particles) which produce delayed shower must be extremely huge: 150 TeV. Such assumption most likely should be abandoned. At present time we can launch two assumptions on the nature of delayed showers. According to the first one they can be generate by the abundance of low energy hadrons produced say at the quark-gluon plasma excitation and consequent cascading in the atmosphere. According to the second assumption “delayed” shower is produced by usual hadrons moving at light velocity, but “outstripping” shower is produced by tachyon which was born in the first interaction and moves with velocity exceeding the velocity of light.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

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Session Classification : Posters 3 + Coffee

Track Classification : HE.3.4