

Fluctuations in the lateral distribution of shower particles observed with the Turku air shower array

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Abstract. In the Turku air shower array there were four Density Detectors (DD) for the determination of the density of the electromagnetic (EM) component of air showers. Three of them were located in the apices of an equilateral triangle, whose sides were app. 19.5 metres. The fourth DD lay in the centre of the triangle. The DDs consisted of two liquid scintillators side by side, each viewed by two photomultipliers (PMTs) on both ends. The pulses from the two PMTs in one scintillator were added together in order to improve the

uniformity of the response.

In the shower analysis the pulse heights recorded with each scintillator pair are added together to give the EM-densities at the positions of the DDs. The comparison of EM-densities in adjacent scintillators gives information on the fluctuations in the lateral distribution of shower particles. In this paper we study the EM-density data recorded with the air shower array in Turku and discuss the results.
