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## THE EXCESS OF MUON RICH EAS CORES DETECTED IN LEAD IONIZATION CALORIMETER ON TIEN - SHAN MOUNTAIN STATION

### Abstract content

We confirm the result obtained many years ago at Tien-Shan mountain station with the large  $36\text{-m}^2$  lead calorimeter, that in extensive air showers (EAS) with energies of few PeV the attenuation of core energy deposit in lead becomes slower than it is predicted by modern codes. To study the absorption of EAS hadrons and muons in a lead ionization calorimeter, the EAS development in an atmosphere was simulated in the framework of the CORSIKA+QGSJET code whereupon the passage of hadrons and muons through lead calorimeter was modelled with using the FLUKA transport code. It is shown that this abnormal absorption is related to the appearance of the excess ( $\sim 8\%$ ) of abnormal cores with a large ionization released in lower layers of the calorimeter and these EAS cores attenuate in lead like high-energy muon groups. Neither the abundance of heavy nuclei in primary cosmic ray flux, nor the prompt muons from charmed particles can help to explain this excess.

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### Summary

### Reference

**Primary author(s) :** Prof. SVESHNIKOVA, Liubov (Skobeltsyn Institute of Nuclear Physics, Moscow State University)

**Co-author(s) :** Dr. CHUBENKO, Alexander (Lebedev Physical Institute, RAS, Moscow, Russia); Prof. MUKHAMEDSHIN, Rauf (Institute for Nuclear Research, RAS, Moscow, Russia); Ms. POPOVA, Natalia (Moscow state University, Moscow, Russia); Dr. NIKOLSKAYA, Natalia (Lebedev Physical Institute, RAS, Moscow, Russia)

**Presenter(s) :** Prof. SVESHNIKOVA, Liubov (Skobeltsyn Institute of Nuclear Physics, Moscow State University)

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