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ESTIMATION OF CHARM PRODUCTION CROSS SECTION IN THE FORWARD KINEMATIC CONE AT ENERGIES $E_{lab} \sim 75$ TEV ACCORDING TO THE HIGH MOUNTAIN EXPERIMENT WITH TWO-STOREY XREC

Saturday 1 August 2015 15:30 (1 hour)

One-year exposition data on absorption of high-energy cosmic ray hadrons with energies of tens of TeV in two-tier X-ray emulsion chamber (XREC) with large air gap (~ 2.2 m) are presented. The experiment was carried out at the Tien Shan High Mountain Research Station located at the altitude of 3340 m a.s.l. It is shown that the abnormal behavior of the hadron absorption curve, which was formerly observed in some cosmic ray experiments with deep lead calorimeters, can be accounted for by assuming a rapid growth of charmed particle production efficiency in the forward cone with increasing energy. The experimental results of both the two-storey XREC exposition and earlier expositions of homogeneous lead calorimeters are compared with simulation data calculated on the basis of a phenomenological hadronic interaction model (code FANSY 1.0) implementing quark-gluon string theoretical approaches and assuming various charm production cross section parameters. A preliminary result of charm production cross section in the forward cone at energy $E_{lab} \sim 75$ TeV is discussed. Particularly, the result is compared with those of collider experiments (RHIC and LHC) obtained for kinematic central region characterizing by relatively low pseudorapidities.

Collaboration

- not specified -

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Author: Dr BORISOV, Alexander (P.N.Lebedev Physical Institute of RAS, Moscow, Russia)

Co-authors: Mr VARGASOV, Andrey (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Dr MOROZOV, Arkadiy (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Dr SMIRNOVA, Marina (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Mr KOGAN, Michael (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Mr KOGAN, Michael (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Dr MUKHAMEDSHIN, Rauf (Institute for Nuclear Research of RAS, Moscow, Russia); Dr NAZAROV, Sergey (M.V.Lomonosov Moscow State University, Moscow, Russia); Dr PYATOVSKY, Sergey (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Dr DENISOVA, Valentina (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Dr DUCHKOV, Vitaliy (P.N.Lebedev Physical Institute of RAS, Moscow, Russia); Dr GALKIN, Vladimir (M.V.Lomonosov Moscow State University, Moscow, Russia); Dr GUSEVA, Zoya (P.N.Lebedev Physical Institute of RAS, Moscow, Russia);

Presenter: Dr BORISOV, Alexander (P.N.Lebedev Physical Institute of RAS, Moscow, Russia)

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