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Comparisom of the Measured Invarinat Cross Sections with Model Predictions for Production at Zero Angle of Secondary Light nuclei in CC-collisions at Beam Energy 20.5 GeV/n on the Accelerator U-70 IHEP

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Abstract. M.Yu. Bogolyubsky, A.A. Volkov, D.K. Elumakhov, A.A. Ivanilov, A.Yu. Kalinin, A.N. Krinitsyn, V.I. Kryshkin, N.V. Kulagin, D.I. Patalakha, K.A. Romanishin, V.V. Skvortsov, V.V. Talov, L.K. Turchanovich "Comparisom of the Measured Invarinat Cross Sections with Model Predictions for Production at Zero Angle of Secondary Light nuclei in CC-collisions at Beam Energy 20.5 GeV/n on the Accelerator U-70 IHEP". The measurements of the invarinat cross sections for particles and nuclear fragments produced forward at zero angle in CC-collisions at beam energy 20.5 GeV/n have been performed on the accelerator U-70 (National Research Center «Kurchatov Institute » Institute for High Energy Physics, Protvino, Russia). For particle detection we use the combine spectromer built from the beamline no. 22 and detectors of the modified setup FODS. Beam line rigidity was veried from 7 to 70 GeV/c. In the experiment the secondary light nuclei with momenta above kinematic limit of NN-interactions have been detected. The transfering from observed yields of patticles to the invariant cross section made on the base of detailed simulation for propagation of particles and nuclei through the beam line and the FODS detectors in the framework of Geant4. By this we define both the angular aperture of the combine spectrometer and the loss of particles and nuclear fragments due to decays and interactions in the material of the setup. Modern version of Gent4 includes a number of theoretical models that allows simple comparison of experimental data and predictions following from theory to select the preferable model with refinement and adjustment of its parameters. For detailed analysis we chose from Geant4 models QGSP-FTFP-BERT-EMV, outside of this package model UrQMD and also nuclear scaling hypothesis supported with Stavinskij formula in terms of Smin variable.

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