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TEST OF NUCLEAR FRAGMENTATION MODELS WITH CARBON FRAGMENTATION AT 0.95 GeV/n

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Differential cross sections of nuclear fragment production at 3.5 degrees for 12C fragmentation at 0.95 GeV/nucleon on a Be target were measured with beam-line spectrometer in the FRAGM experiment at the TWA–ITEP heavy ion accelerator [1]. The fragments from proton to carbon isotopes have been identified by correlation measurement of time-of-flight and ionization losses in scintillation detectors. The fragment momentum distributions in laboratory frame are compared to the predictions of four ion-ion interaction models: INCL++, LAQGSM03.03, QMD and BC [2]. Obtained experimental data on differential cross sections for wide set of fragments are included to the experimental nuclear reaction database EXFOR[3]. Successes and drawbacks of above mentioned models are discussed. Two approaches were used to describe the invariant cross sections of the fragment production. In the thermodynamic model [4], the spectra for protons and light fragments can be described as a sum of two exponential functions with different inverse slope parameters (called temperatures) for statistic and cumulative mechanisms. Obtained temperatures are in a good agreement with world data. For light fragments, coalescence model have been used to extract information on a size of the interaction region [5]. The measurements of coalescence coefficients give the typical radius about 3 fm. References 1. B.M. Abramov et al., JETP Lett. 97 (2013) 439, Pisma Zh.Eksp.Teor.Fiz. 97 (2013) 509. 2. B.M. Abramov et al., Phys.Atom.Nucl. Vol. 78, Issue 5 (2015), 403. 3. B.M. Abramov et al., Phys.Atom.Nucl. Vol. 79, Issue 5 (2016), 700. 4. W. Bauer, Phys.Rev. C 51 (1995), 803. 5. S. Nagamiya et al., Phys.Rev. C 23 (1981), 971.

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