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Study the fragmentation of ^{7}Be nuclei in mixed beam with nuclear track emulsion

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Starting with the discovery of the nuclear component of cosmic rays, the nuclear track emulsion method (NTE) makes an opportunity to study the composition of the relativistic fragmentation of nuclei at high-energy accelerators. The promising potential of the relativistic approach to the analysis of ensembles of fragments was manifested in NTE exposed by nuclei at several GeV per nucleon accelerated at the JINR Synchrophasotron and Bevalac (USA) in the 1970s. Since the 2000s of the NTE method is applied in the BECQUEREL experiment at the JINR Nuclotron in respect to the cluster structure of nuclei, including radioactive ones, as well as the search for unstable nuclear-molecular states. Nucleon associations (clusters) are one of the basic phenomena in atomic nuclei structure. Their simplest observable manifestations are the lightest He and H nuclei. Superpositions of the lightest clusters and nucleons form subsequent nuclei (including unstable^{8}Be and B), which act as constituent clusters themselves for more complicated nuclear systems [1-4]. The phenomena of cluster dissociations of light Be and B isotopes are discussed. Charge topology and angular spectra of fragmentation of 1.2 A GeV ^{7}Be nuclei in NTE are presented. The dissociation channels ^{4}He +^{3}He, 2^{3}He+ n, ^{4}He + 2^{1}H are considered in detail. It is established that the events ^{6}Be + n amount about to 27% in the channel ^{4}He + 2^{1}H. The experimental results are compared with model data of fragmentation of such nuclei in NTE.

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