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The first results of analysis of nuclear track emulsion exposed to relativistic nucleus ^{11}C and ^{10}B

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Featuring an excellent sensitivity and spatial resolution nuclear track emulsion (NTE) maintains the position of a universal and inexpensive detector for survey and exploratory research in microcosm physics. Use of this classical technique on beams of modern accelerators and reactors turns out highly productive. In a number of important tasks the completeness of observations provided in NTE cannot be achieved for electronic detection methods. In particular, in the last decade clustering work of a whole family of light nuclei including radioactive ones was investigated in the processes of dissociation of relativistic nuclei in NTE [1, 2].

Recent data on pattern of diffractive dissociation of the ^{11}C and ^{10}B will be discussed in this context. It is already established that 144 "white" stars produced by the ^{11}C in NTE are distributed over the charge channels in the following way: 2He + 2H (50%), 3He (17%), ^{7}Be + He (13%), He + 4H (11%), B+H (5%), Li + He + H (3%), 6H (2%). The distributions of He fragments over the opening angle θ_{2He} show that $^{8}Be_{g.s}$ decays are presented in 21% 2He + 2H and 19% in the 3He events. These distributions allow one to assume a strong contribution of $^{8}Be_{2+}$ decays but it is a subject of future consideration. The ^{9}B nucleus can exist in ^{11}C as an independent virtual component or as a component of a virtual basis ^{10}B.

Measurements of the first 21 stars pointed to four decays $^{8}Be_{g.s}$, two of which originated from $^{9}B_{g.s.}$ decays. Measurements of "white" stars ^{10}B, including identification of He and H isotopes by a multiple scattering method, are in progress now.

1. P.I. Zarubin // Lect. Notes in Phys. 2013 V.875. P.51.
2. K.Z. Mamatkulov et al. // Phys. At. Nucl. 2013 V.76. P.1224.

Presentation type

Poster

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