Contribution ID : **9** Type : **not specified**

Clustering features of light neutron-deficient nuclei in relativistic dissociation

Wednesday, 7 October 2015 09:30 (30)

Nuclear track emulsion (NTE) is still retaining its exceptional position as a means for studying the structure of diffractive dissociation of relativistic nuclei owing to the completeness of observation of fragment ensembles and owing to its record spatial resolution. Separation of products of fragmentation and charge-exchange reactions of accelerated stable nuclei make it possible to create beams of radioactive nuclei. A unification of the above possibilities extends the investigation of the clustering phenomena in light radioactive proton-rich nuclei. Conclusions concerning clustering features are based on the probabilities for observing of dissociation channels and on measurements of angular distributions of relativistic fragments. At the JINR Nuclotron exposures of NTE stacks of (NTE) are performed at energy above 1 A GeV to the beams of isotopes Be, B, B, C and N, including radioactive ones [1]. In general, the results confirm the hypothesis that the known features of light nuclei define the pattern of their relativistic dissociation. The probability distributions of the final configuration of fragments allow their contributions to the structure of the investigated nuclei to be evaluated. These distributions have an individual character for each of the presented nuclei appearing as their original “autograph”. The nuclei themselves are presented as superposition of light nuclei-cores, the lightest nuclei-clusters and nucleons. Recent data on pattern of diffractive dissociation of the nuclei 9C, 10C, 11C and 12N will be discussed in this context. [1] P. I. Zarubin // Lect. Notes in Phys, Springer, 875, 51(2013); arXiv:1309.4881.

Presentation type

Plenary (25+5 min)

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Session Classification : Nuclear physics and particle physics - plenary III

Track Classification : Nuclear physics and particle physics