

Unstable nuclei in dissociation of light stable and radioactive nuclei in nuclear track emulsion

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Study of the cluster structure of light nuclei including radioactive ones in relativistic-fragmentation processes is a topic of the project BECQUEREL which continues the tradition of use of the technique track emulsion (NTE). Such reactions are under study by means of NTE stacks longwise exposed to primary and secondary beams of relativistic nuclei of the JINR Nuclotron. Coherent dissociation of relativistic nuclei to narrow jets of fragments which is not featuring either slow fragments or mesons serves as a ground for studying nuclear clustering. Currently, contribution of the unstable nuclei ^8Be and ^9B in structure of ^9Be , ^{10}B and ^{12}C is in a focus of the research. Highlights and recent advances reviewed in are summarized. Search for α -particle triples in the second excited state of the ^{12}C nucleus (the Hoyle state) in ^{12}C dissociation is suggested. Reanalysis of 3.6 A GeV ^{12}C dissociation is revealed 3α -events corresponding to the Hoyle state. Recently exposed stacks of NTE pellicles exposed to ^{12}C of 400 A MeV energy at the IHEP accelerator complex (Protvino) provide development of this study. Progress of analysis for the Hoyle state events will be presented.

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