# Multiple fragmentation of relativistic nuclei in nuclear track emulsion

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The phenomenon of dissociation of relativistic nuclei observed with a unique completeness in the nuclear track emulsion (NTE) makes it possible to study ensembles of nucleons and lightest nuclei of interest to nuclear physics and nuclear astrophysics [1]. The advantages of the NTE technique include a record resolution in determining emission angles and the possibility of identifying the relativistic fragments He and H. Individual features of the nuclei under study are manifested in probabilities of dissociation channels. In such an approach the cluster structure of the light stable and radioactive isotopes was systematically examined in the framework of the BECQUEREL experiment [2] at the JINR Nuclotron. Recently, among the unstable $^{8}$Be and $^{9}$B nuclei were identified projectile fragments in the dissociation of $^{9}$Be, $^{10}$B, $^{10}$C, $^{11}$C by the invariant mass of relativistic He and H pairs and triples, and the Hoyles state in the $^{12}$C case [3, 4]. At the upcoming stage the BECQUEREL experiment will be aimed at properties of the baryonic matter arising in dissociation of heavy nuclei by simultaneous determination of yields of relativistic H and He isotopes and neutrons. NTE layers long-wise exposed to beams of the NICA Collider will serve as the research material allowing investigating light nuclear ensembles of unprecedented multiplicity and diversity.

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[2] The BECQUEREL Project http://becquerel.jinr.ru/movies/movies.html.

[3] D.A. Artemenkov *et. al.*, Phys. Part. Nucl. **48**, 147 (2017).

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