ANALYSIS OF NUCLEAR TRACK EMULSION EXPOSED BY RELATIVISTIC HADRONS

M. Natarajan, A. Zaitsev, D. Artemenkov, P. Zarubin
Joint Institute for Nuclear Research
E-mail: nmkmari@gmail.com

The recent results of exposure of a nuclear track emulsion (NTE) in a mixed hadron beam is discussed. The purpose of this work is to search and measure the length of short-range tracks of alpha particles produced in the interactions of hadrons and nuclei from the composition of a NTE. Modeling the ionization losses of alpha particles in the substance of a NTE in the SRIM program made it possible to reconstruct their kinetic energies in each found event. Reconstruction of tracks in full 4π-geometry makes it possible to reconstruct the emission angles of alpha particles with high accuracy. In this way, combinatorial spectra of invariant masses of systems of (2-3) alpha particles in the event have been obtained. The angular and energy correlation of the produced alpha particles is presented.