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Charged particle identification by the Time–of–Flight method in the BM@N experimen

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BM@N (Baryonic Matter at Nuclotron) is a fixed target experiment at the NICA - Nuclotron accelerator complex (JINR). It is aimed at studies of nuclear –nuclear (up to gold-gold) collisions at high densities. The Nuclotron provides heavy ion beams with energies from 2.3 to 3.5 GeV, which is suitable for studies of strange mesons and multi–strange hyperons produced in nucleus-nucleus collisions close to the kinematic threshold. At these energies, nucleon densities in a collision zone exceed the saturation density by the factor of 3-4, can be useful for studying the equation of state (EOS) of dense nuclear matter.
The contribution is devoted to the identification of light particles (pi, K, p) and fragments (He3, d/He4, t) in the BM@N experiment using the Time–of–Fight method. Three detector subsystems are involved: it is a central tracker (inside the analyzing magnet), Cathode Strip Chamber (CSC) and Time–of–Flight detector (TOF). The main purpose of the central tracker is to reconstruct the charged particles tracks and momenta. We use CSC to filter out the bad tracks. And we obtain the time information from the TOF. For now, the method allows us to separate the light particles up to 2 GeV/c and the light fragments up to 4 GeV/c by the full momentum.

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