

Particle identification methods in the BM@N experiment

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The BM@N (Baryonic Matter at the Nuclotron) is a fixed target experiment at the NICA (Nuclotron-based Ion Collider fAcility). The first physics runs were carried out with the collection of experimental data in 2018. One of the important problems of the experiment is particles identification. This paper discusses the implemented identification algorithms based on the separation of charged particles by time of flight. The implemented methods were planned to be applied to experimental and Monte Carlo data. However, the experimental data are noisy, therefore, before applying identification methods to them, the filtering procedures described in this work were carried out. The paper also describes the implemented algorithm for calculating the efficiency of stations. It is used in order to determine how much better the Monte Carlo data than the experimental ones. After adding in the Monte Carlo data effects that make them more similar to the results obtained in the experiment, the identification method was applied to them. The results of the effectiveness of the method, obtained by testing it on modified Monte Carlo data, are presented in this work. This work is supported by Russian Foundation for Basic Research grant 18-02-40104 mega.

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