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Embedding procedure as an instrument to be used for optimal reconstruction of particle trajectories from Λ^0 decay

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BM@N is a really working fixed target experiment considered as a first step towards a fulfil realization of physics program at the NICA accelerator complex (Dubna, Russia). It has an extensive physics program to be investigated. Estimation of yields of strange particles in the BM@N energy range ($E_{lab} = 2 - 6$ AGeV) is considered as a point of utmost importance due to lack of measurements. The enhanced yield of strange particles in this energy range could be attributed to onset of deconfinement. To cover this aspect of the BM@N physics program, one requires to have an appropriate tracking procedure and robust algorithms of reconstruction of secondary particles produced by strange particles decays. The current work is dedicated to a corresponding adjustment of the BM@N tracking procedure aimed at a better reconstruction of tracks from the $\Lambda^0 \rightarrow \pi^- p$ decay. It is done by embedding the Monte Carlo information from the Λ^0 decay products produced in the conditions very close to those ones one had in the course of experiment, so taking into account a set of realistic effects when doing detector simulations, in existing experimental data obtained in the recent experimental run of BM@N (March, 2018). Some issues concerning a developed algorithm of the embedding procedure, data separation, efficiency and so on are discussed in the work. Preliminary setups for the BM@N tracking procedure to be used for optimal reconstruction of Λ^0 decay products are also planned to be presented.

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