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Analysis of Λ -hyperon production in carbon-solid target collisions in the BM@N experiment

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BM@N (Baryonic Matter at Nuclotron) is the first fixed target experiment collecting data at the NICA accelerator. The goal of BM@N physics program is a study of highly compressed nuclear matter in heavy ion beams. The Nuclotron provides heavy ion beams with energies from 2.3 to 4.5 AGeV, which is suitable for studies of strange mesons and multi-strange hyperons produced in nucleus-nucleus collisions close to the kinematic threshold. The BM@N experiment collected its initial data using a carbon beam with kinetic energies of 4.0 and 4.5 AGeV and a set of solid targets, including Al, C, Cu, and Pb. This paper outlines the methodology for calculating cross sections and measuring yields in the $\Lambda \rightarrow p + \pi^-$ decay channel. Additionally, the results include estimates of the temperature inside the fireball, obtained from the inverse distributions of transverse momenta.

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