

Study of hypernuclei identification in ultra-relativistic heavy-ion collisions using a machine learning approach

We present a study on the application of different machine learning algorithms for the identification of hypernuclei produced in heavy-ion collisions, particularly those with mass numbers $A = 3$ to $A = 5$. The study focuses on three supervised learning algorithms - Boosted Decision Trees, Support Vector Machines, and Artificial Neural Networks - which were trained to distinguish true hypernuclei candidates from combinatorial background using topological and kinematic variables of their decay products. The results demonstrate that these techniques significantly improve the background rejection of the selected hypernuclei candidates compared to traditional identification methods, thereby enhancing both the significance and precision of the measurements.

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