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Kaons and antikaons in multi-phase transport model

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Abstract

We investigate the impact of medium modifications of kaons and antikaons on their rapidity distributions, production ratio as well as the flow pattern using A Multi-Phase transport (AMPT) model. The medium modified masses of kaons and antikaons, which are used as input in AMPT model, are calculated using the chiral SU(3) mean field model. Within chiral SU(3) model along with the Weinberg Tomozawa term, the contribution of explicit symmetry breaking term and three range terms is incorporated to study their impact on the above listed experimental observables. The repulsive contribution to the masses of K^+ meson from the Weinberg term and one range term dominate over the attractive contribution from explicit symmetry breaking as well as other two range terms. For the K^- meson repulsive contribution comes from first range terms only whereas all other terms have attractive contribution. Considering all these features from chiral effective model on properties of K^+ and K^- mesons, we explore the splitting in the flow of kaons and antikaons.

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