Finite temperature effects on the $\bar{K}$ optical potential

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Abstract

Solving the Bethe-Goldstone equation for G-matrix, we have obtained the $\bar{K}$ optical potential from the $\bar{K}N$ effective interaction in nuclear matter at $T = 0$ (L.Tolós, A.Ramos, A.Polls and T.T.S.Kuo, nucl-th/0007042). We have extended the model by incorporating finite temperature effects in order to adapt our calculations to the experimental conditions in heavy-ion collisions. In the rank of densities $(0 - 2\rho_0)$, the finite temperature $\bar{K}$ optical potential shows a smooth behaviour if we compare it to the $T = 0$ outcomes. In the spirit of G.Brown paper (G.Brown, M.Rho, C.Song, nucl-th/0010008), our model has also been applied to the study of the ratio between K^+ and $\bar{K}$ produced at GSI with T around $70MeV$. Our results (L.Tolós, A.Polls, A.Ramos and J.Schaffner-Bielich, in preparation) point at the necessity of introducing our $\bar{K}$ optical potential according to the experimental data.