Strangeness Equilibration at GSI Energies

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Abstract

We argue that *both* K^+ and K^- must get lighter in dense medium at some density $\rho > \rho_0$ due to the decoupling of the vector mesons. This modifies significantly the strangeness equlibration as well as kaon condensation scenarios hitherto put forward in the literature. We note that the claimed equilibration density at GSI energies, $\sim \rho_0/4$ – which is much too low – results from a baryon chemical potential μ_B which is substantially less than m_N. It is shown that the "equilibration density" for positive strangeness can be increased by a factor of $\sim$ 8, to $2\rho_0$. One of the consequences of this scenario is that kaon condensation in compact stars could take place *before* chiral restoration since the sum of bare quark masses in the kaon should lie below μ_e.

We expect dropping kaon masses to play an important role in the strangeness equilibration claimed for AGS and SPS experiments.

Preprint submitted to Elsevier Preprint *20 December 2000*