Diomega Production in Relativistic Heavy Ion Collisions

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Using a multiphase transport (AMPT) model, we have studied the production of a new strange dibaryon $(\Omega\Omega)_{0+}$ in dense hadronic matter formed in relativistic heavy ion collisions [1]. The (multi-)strange baryons (Ξ and Ω) are produced by strangeness-exchange reactions between antikaons and hyperons in the pure hadronic phase. The rescattering involving Ω(s) at midrapidity leads to a production probability of ~ $2.8X10^{-6}$ $(\Omega\Omega)_{0+}$ per event for central Au+Au collisions at the RHIC energy of $s_{NN}^{1/2}$ = 130 A GeV. The production probability would be enhanced by about one order of magnitude if $(\Omega\Omega)_{0+}$ and Ω reach chemical equilibrium during heavy ion collisions. We further find that the yield of $(\Omega\Omega)_{0+}$ increases continuously from SPS to the highest RHIC energy as shown in Fig.1.

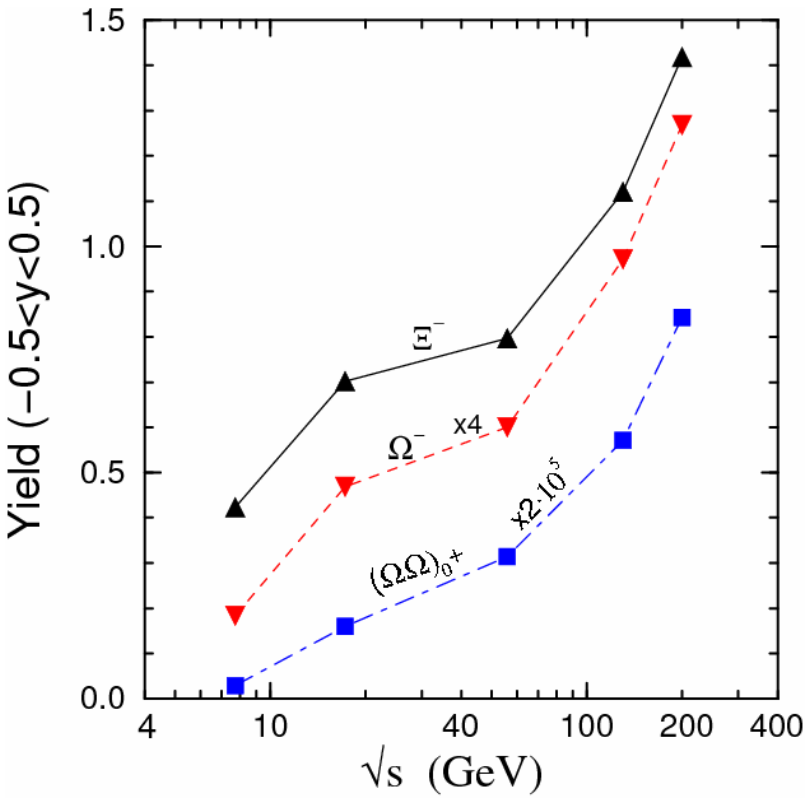

Figure 1. Energy dependence of Ξ^-, Ω^-, and $(\Omega\Omega)_{0+}$ at midrapidity $|y|<0.5$ for heavy ion collisions at impact parameters of b<3 fm in the AMPT model.

[1] S. Pal and C.M. Ko, Phys. Lett. B **624**, 210 (2005).