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Production of ΩNN and ΩΩN in ultra-relativistic heavy-ion collisions

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The studies of multi-strangeness hypernuclei help us further understand the interaction between hyperons and nucleons. This work discusses the productions of triple-baryons including Ω, namely ΩNN and $\Omega\Omega N$, their decay channels and the baryon number dependence of productions. A variation method is used in calculations of bound states and binding energy of ΩNN and $\Omega\Omega N$ with the potentials from the HAL-QCD's results. The productions of ΩNN and $\Omega\Omega N$ are predicted by using a blast-wave model plus coalescence model in ultra-relativistic heavy-ion collisions at $\sqrt{s_{NN}} = 200$ GeV and 2.76 TeV. The decay channel are simply discussed based on the coupled channels appeared in HAL-QCD calculation. Furthermore, plots for baryon number dependent yields of different baryons (N and Ω), their dibaryons and hypernuclei are made and the production rate of a more exotic tetra-baryon ($\Omega\Omega NN$) is extrapolated.

Theory / experiment

Theory

Group or collaboration name

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