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Chemical freeze-out parameters of net-kaons in heavy-ion collisions

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We calculate the mean-over-variance ratio of the net-kaon fluctuations in the Hadron Resonance Gas (HRG) model for the five highest energies of the RHIC Beam Energy Scan (BES) for different particle data lists. We compare these results with the most recent experimental data from the STAR collaboration in order to extract sets of chemical freeze-out parameters for each list. We focused on particle lists which differ largely in the number of resonant states. By doing so, our analysis determines the effect of the amount of resonances included in the HRG model on the freeze-out conditions. In view of the future Λ fluctuation measurements, we predict the Λ variance over mean and skewness times variance at the light and strange chemical freeze-out parameters. We observe that the Λ fluctuations are sensitive to the difference in the freeze-out temperatures established in this analysis. Our findings have a potential impact on various other models in the field of relativistic heavy ion collisions.

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