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# Chemical Freeze-Out of Hadrons Within the Induced Surface Tension Hadron Resonance Gas Model

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Strangeness production in heavy-ion collisions provides crucial insights into strongly interacting matter. The ratio of charged kaons to pions serves as a signature of deconfinement, with experimental observations revealing a distinct horn structure. The Induced Surface Tension (IST) Hadron Resonance Gas Model [1] effectively describes strangeness production and the horn structure, offering valuable information about the thermodynamic conditions at freeze-out.
We present an updated version of this model that allows the fitting of ratios among different hadrons, taking into account both inclusive and exclusive feed-down corrections consistently with experimental analysis. Our study of STAR experimental data on hadron multiplicities emphasizes the essential role of accounting for the contribution of weak decay processes to particle multiplicities and allows us to accurately describe the experimental results. Remarkably, our findings concerning the chemical freeze-out (CFO) parameters, obtained from fits to STAR BES data across collision energies ranging from 7.7 to 200 GeV, closely correspond to those derived from other models for ALICE data at 2.76 TeV and lattice QCD results for the pseudocritical line temperature.

[1] O. V. Vitiuk et al., Eur. Phys. J. A 57(2) (2021) 74.

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