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Phenomenology of Identified Particle Spectra in Heavy-Ion Collisions at LHC Energies

The Zubarev approach of the non-equilibrium statistical operator [1] is used to develop a thermal particle generator that can account for the enhancement of the low-pT part of pion spectra by introducing an effective pion chemical potential. This is an alternative to the explanation of the low-pT enhancement by resonance decays. Bayesian inference methods are applied for these scenarios to find the most probable sets of thermodynamic parameters at the freeze-out hypersurface for the case of the transverse momentum spectra of identified particles measured by the ALICE Collaboration [2]. The Bayes factor is determined for these scenarios. The advantages and limitations of the Zubarev approach are discussed.
[1] D. Blaschke et al., Particles 3, 380–393 (2020)
[2] B. Dönigus et al., Phys. Rev. C 106, 044908 (2022)

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