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## Bayesian Parameter Estimation for Relativistic Heavy-Ion Collisions: Phenomenology of Identified Particle Spectra

The Zubarev approach of the non-equilibrium statistical operator [1] is used to account for the enhancement of the low- $p_T$  part of pion spectra by introducing an effective pion chemical potential [2]. This is an alternative to the explanation of the low- $p_T$  enhancement by resonance decays. We report on the first results obtained with a newly developed thermal particle generator that implements both mechanisms of low- $p_T$  enhancement. With the help of the principal component analysis and Gaussian processes emulators based surrogate model, Bayesian inference methods were 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.

## References

D.N. Zubarev et al., Statistical Mechanics of Nonequilibrium Processes, Akademie Verlag Berlin (1996), vol.
D. Blaschke et al., Particles 3, 380–393 (2020)

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