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Study of the sign problem in canonical approach

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Canonical approach is one of the powerful tools to approach the QCD phase diagram. We calculate the canonical partition function instead of the grand canonical one in the canonical approach. However, it is known that the sign problem emerges as a complex phase of the canonical partition function.

Thanks to multi-precision calculations with the canonical approach we obtained the canonical partition function even for large baryon numbers. In this talk, we will argue the origin of this “phase”, and study some behavior of its temperature and baryon number dependence.

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