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Mapping out the phase diagram

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We employ a conformal mapping of the chemical potential μ to explore the thermodynamics of strongly interacting matter at finite values of the baryon chemical potential μ. This method allows us to identify the singularity corresponding to the critical point of a second-order phase transition at finite μ given information only at $\mu = 0$. This scheme is potentially useful for computing thermodynamic properties of strongly interacting hot and dense matter in lattice QCD. The usefulness of this technique is illustrated by an application to a chiral effective model.

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