

Thermodynamics for pion gas in the large N limit

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We utilize the nonlinear sigma model for large N as an effective theory for low-energy QCD to study the thermodynamical behavior of a pion gas through a virial expansion of pressure. In particular, we determine the entropy density, specific heat, trace anomaly, and the speed of sound, to find a signature of the deconfinement phase transitions. After considering below critical regimes and specifications in the scattering processes, our results show a concordance with lattice and other theoretical results for a light meson gas.

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