Resummed Thermodynamics at Finite Temperature and Density[1]
MICHAEL STRICKLAND, Kent State University — I will present the result of
a calculation of the finite temperature thermodynamic functions of a quark-gluon
plasma for general N_c and N_f to three-loop order using hard-thermal-loop per-
turbation theory. At this order, all ultraviolet divergences can be absorbed into
renormalizations of the vacuum energy, the HTL mass parameters, and the strong
coupling constant. I will show that at three loops, the results for the pressure, energy
density, entropy density, and the trace anomaly are in very good agreement with
lattice data down to temperatures $T > 2\,T_c$. In addition, I will present results of
a recent two-loop calculation at finite temperature and chemical potential utilizing
the same framework.

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