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RG Improvement of the Scalar Effective Potential in Finite Temperature Quantum Field Theory

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Its been demonstrated that "optimized partial dressing" (OPD) thermal mass resummation, which uses gap equation solutions inserted into the tadpole, efficiently tames finite temperature perturbation theory calculations of the effective thermal potential, without necessitating use of the high-temperature approximation. Even though it was shown that OPD has a similar scale dependence as 3D EFT approaches in the high-T limit, the calculated scale dependence of variables, in particular strength of gravitational wave signal from phase transition is sizeable. In this talk we will show a self-consistent way to RG improve scalar potential at finite temperature in the OPD formalism and demonstrate large reduction in scale dependence of physical observables in comparison to current techniques.

Mini Symposia (Invited Talks Only)

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