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Equation of State of hot and dense QCD: Resummed perturbation theory confronts lattice data

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The perturbative series for finite-temperature field theories has very poor convergence properties and one needs a way to reorganize it.

In this talk, I review two ways of reorganizing the perturbative series for field theories at finite temperature and chemical potential, namely hard-thermal-loop perturbation theory (HTLpt) and dimensional reduction (DR).

I will present results for the pressure and the quark susceptibilities from a 3-loop HTLpt calculation and for the quark susceptibilities using DR at four loops.

A careful comparison with available lattice data shows good agreement for a number of physical quantities.

Author: ANDERSEN, Jens Oluf

Co-authors: VUORINEN, Aleks; BANDYOPADHYAY, Aritra (Saha Institute); STRICKLAND, Michael (Kent State University); Prof. MUSTAFA, Mustafa (Saha Institute); HAQUE, Najmul (Saha Institute of Nuclear Physics); Dr SU, Nan (Bielefeld University); Dr MOGLIACCI, Sylvain (Bielefeld U)

Presenter: ANDERSEN, Jens Oluf

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