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All order resummed next-to-leading soft modes of cold and dense QCD pressure

Thursday 28 July 2022 14:40 (25 minutes)

By identifying {\em massive} renormalization group (RG) properties within the hard thermal loop (HTL) formalism, we resum to all orders $\alpha_S^p, p \geq 3$ the leading and next-to-leading logarithmic soft mode $m_E \sim \alpha_S^{1/2}\mu_B$ contributions to the cold and dense QCD pressure at high baryon chemical potential μ_B.
We obtain noticeably reduced residual scale dependence with respect to the state-of-the art results.
We will discuss applications to the NNLO Equation of State of cold and dense quark matter, also including extension to massive quarks, relevant in particular for the phenomenology of neutron stars.

Mostly based on L. Fernandez and J.-L. Kneur, arXiv:2109.02410 and more recent work in progress.

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