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Towards a theoretical description of dense QCD

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The properties of matter at finite baryon densities plays an important role for the astrophysics of compact stars as well as for heavy ion collisions or the description of nuclear matter. Because of the sign problem of the quark determinant, lattice QCD cannot be simulated by standard Monte Carlo at finite baryon densities. I describe an alternative attempt to treat dense QCD with an effective 3d lattice theory, which is valid for very heavy quarks only, but shows all qualtitative features of nuclear physics emerging from QCD. In particular, the nuclear liquid gas transition and an equation of state for baryons can be directly calculated from QCD.

Summary

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