

Studying of SU(N) LGT in external chromomagnetic field with QCDGPU

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The vacuum structure of lattice SU(N) gluodynamics in presence of external chromomagnetic field is studied with open source package QCDGPU. The package is adapted to investigate vacuum thermodynamics at non-zero chromomagnetic field both at zero and finite temperatures. In particular, the QCDGPU package allows to explore such an important problem as spontaneous chromomagnetic field generation in the high temperature phase. The package provides measurement of standard lattice quantities as well as some non-standard quantities like spatial distribution of the Polyakov loop, the components of the field tensor and so on. Especially, they may be used to study the coexistence of chromoelectric and chromomagnetic fields, to investigate the structure of A_0 condensate, etc. The direct field strength measurement provides an alternative way to investigate the spontaneous vacuum magnetization at high temperature. Examples of QCDGPU usage in exploring some properties of SU(2) and SU(3) gauge theories are presented.

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