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QCD phase diagram in strong magnetic background

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A background magnetic field is able to alter the confinement and chiral properties of QCD. We study the effects of two extremely strong magnetic background intensities, namely $eB = 4$ and 9 GeV^2, on the phase structure of the QCD with $2 + 1$ flavors at the physical point, by means of lattice simulations. We find evidences for a first order phase transition in the stronger magnetic field, occurring at an unexpected low temperature: about 60 MeV. Then, we provide the updated phase diagram of the QCD in a background magnetic field.

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