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Phase diagram of QCD in strong magnetic background field

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We discuss the phase diagram of QCD in the presence of a strong magnetic background field, providing numerical evidence, based on lattice simulations of QCD with 2+1 flavors and physical quark masses, that the QCD crossover turns into a first order phase transition for large enough magnetic field, with a critical endpoint located between $eB = 4 \text{ GeV}^2$ (where we found an analytic crossover at a pseudo-critical temperature $T_c = (98 \pm 3) \text{ MeV}$) and $eB = 9 \text{ GeV}^2$ (where the measured critical temperature is $T_c = (63 \pm 5) \text{ MeV}$).

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