

QCD Phase Diagram

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The crucial properties of the QCD vacuum —confinement and chiral symmetry breaking—undergo qualitative changes at sufficiently high temperatures and/or baryon densities. Determining where on the phase diagram and how the transitions between QCD phases are accomplished is the major goal of heavy-ion collision experiments, as well as of theoretical efforts including first-principle lattice calculations. Is there a critical point in QCD separating crossover from the first order transition on the boundary between quark-gluon plasma and hadron gas phases? Heavy-ion collision experiments could answer this question by focusing on universal signatures characteristic of critical phenomena.

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