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The CEP of QCD Matter Acts as a Thermalization Point

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The critical endpoint (CEP) in the quantum chromodynamics (QCD) phase diagram may act as a thermalization point, drawing non-equilibrium systems toward thermodynamic equilibrium. Using transport and gap equations from the NJL model, we show that QCD matter perturbed by velocity fields near the first-order phase transition line evolves toward the CEP. Simulations confirm this attractor behavior: systems near the CEP return to it after perturbations, and those along the phase boundary converge toward it.

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