

Anomaly-induced inhomogeneous phase in QCD-like theories

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The ground state of QCD at nonzero baryon number chemical potential and in sufficiently strong magnetic fields is the Chiral Soliton Lattice: a topological phase carrying a crystalline condensate of neutral pions. The same is true for other QCD-like theories, including theories free from the sign problem. This disproves the long-standing conjecture that positivity of the determinant of the Dirac operator in a QCD-like theory implies the absence of inhomogeneous phases in its phase diagram.

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