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Title: Higgs-confinement phase transitions with fundamental representation matter

Abstract: Gauge theories with fundamental representation matter fields can have confining and Higgs regimes which are smoothly connected with no intervening phase transition, reflecting the absence of any local order parameter which can distinguish the two regimes. But this is not always the case. In particular, in theories with a global $U(1)$ symmetry which is spontaneously broken in both confining and Higgs regimes, these regimes are distinct phases which may be identified using a novel topological vortex order parameter. This is illustrated using an explicit three dimensional model, but the analysis generalizes to four dimensions where it implies that nuclear matter and quark matter are sharply distinct phases of dense QCD with an approximate $SU(3)$ flavor symmetry.