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Emergent phenomena from centre vortices in lattice QCD

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We review some highlights of the centre vortex research programme conducted by the CSSM in SU(3) lattice gauge theory. Starting from the original Monte Carlo gauge fields, a vortex identification procedure yields vortex-removed and vortex-only backgrounds. The original, vortex-removed, and vortex-only ensembles are compared by examining a number of different quantities. The removal of vortices consistently results in the removal of the corresponding feature associated with confinement or dynamical chiral symmetry breaking. Remarkably, we observe that after some smoothing, the vortex-only degrees of freedom are able to encapsulate the pertinent features of the original gauge fields.

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