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How center vortices break chiral symmetry

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We analyze the creation of near-zero modes from would-be zero modes of various topological charge contributions from classical center vortices in $SU(2)$ lattice gauge theory. We show that colorful spherical vortex and instanton configurations have very similar Dirac eigenmodes and also vortex intersections are able to give rise to a finite density of near-zero modes, leading to chiral symmetry breaking via the Banks-Casher formula. We discuss the influence of the magnetic vortex fluxes on quarks and how center vortices may break chiral symmetry.

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