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Vortices and chiral symmetry breaking

Monday 3 February 2014 18:00 (30 minutes)

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 magnetic vortex fluxes on quarks and how center vortices may break chiral symmetry.

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