

Visualisations of the non-trivial QCD vacuum

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Despite the success of quantum chromodynamics (QCD) in describing the strong nuclear force, a clear picture of how this theory gives rise to the distinctive properties of confinement and dynamical chiral symmetry breaking at low energy is yet to be found. One of the more promising models used to explain these phenomena in recent times is known as the centre vortex model. In this work we explore the properties of the gluon propagator in the context of this model, adding to the already substantial body of evidence supporting the importance of centre vortices in QCD. We also present novel visualisation techniques that have been devised to allow for detailed hands-on exploration of the centre-vortex structure of the QCD vacuum. These techniques provide new insight into the behaviour of centre vortices in low-energy lattice QCD.

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