

Correlations between Abelian monopoles and center vortices in SU(2) and SU(3) gauge groups

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Abstract

In this research, we study the correlations between magnetic monopoles and center vortices in SU(2) and SU(3) gauge groups in a phenomenological model. Both center vortices and monopoles lead to the quark confinement. Therefore, one may expect that there is some kind of relation between monopoles and center vortices. Investigating the quark potentials and group factor obtained by the monopole-antimonopole pairs in SU(2) gauge group, we observe that these pairs deform to monopole-vortex chains. The results agree with lattice gauge theory. In addition, we investigate combinations of magnetic monopoles in SU(3) gauge group leading to vortex flux.

Keywords: Confinement, Wilson loop, Magnetic monopole, Center vortex

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