QCD Monopoles and Quark Confinement Mechanism

Dr. Atsuki Hiraguchi

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SC427, Science Building III, NYCU

Abstract: Quark confinement mechanism is one of unsolved important problems. In the dual superconductor picture of color confinement, it is considered that the color flux tube between quarks is caused by the condensation of color magnetic monopoles in the QCD vacuum. In this talk, we show new results of the dual Meissner effect due to the violation of non-Abelian Bianchi identity corresponding to Abelian Dirac-type monopoles in pure SU(3) gauge theory. We discuss the vacuum type by evaluating the Ginzburg-Landau parameter through the measurements of Abelian electric field and Abelian squared monopole density without gauge fixing.