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Boundary effects on the chiral condensate from Lattice QCD

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In the presence of a constant electric field the vacuum becomes unstable due to Schwinger pair creation. One way to avoid this instability is to use Dirichlet boundary conditions. In this case the chiral condensate vanishes on the walls and it is important to know how quickly it gets restored to its bulk value. A sigma-model calculation predicts that the region where the condensate differs significantly from its bulk value is rather thick. We show by direct calculation that this region is much thinner than estimated.

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