Laboratoire de Physique Théorique et Hautes Energies

Unité Mixte de Recherche (UMR 7589) de Sorbonne Université et du CNRS

SEMINAIRE du LPTHE

Jeudi 19 Octobre 2017, 11:00

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LPTHE

Critical behavior of (2+1)-dimensional QED

The talk will focus on dynamical chiral symmetry breaking (DCSB) in three-dimensional QED with N four-component fermions. The interest in QED3 comes from its similarities to (3+1)-dimensional QCD and the fact that DCSB may be studied systematically in this simpler model. Additionally, QED3 is often used as an effective field theory model describing planar condensed matter physics systems. In this talk, we shall present recent results related to the computation of the critical fermion flavor number, Nc, which is such that DCSB takes place for N<Nc. The method envolves solving the Schwinger-Dyson gap equation in an arbitrary nonlocal gauge up to next-to-leading order in the 1/N-expansion. Our results suggest that DCSB should take place for integer values N smaller or equal to 3. If times allows, a new mapping between QED3 and the so-called reduced QED, describing planar Dirac liquids at the infra-red Lorentz invariant fixed point, will be presented together with new results on dynamical gap generation in these liquids.

Bibliothèque du LPTHE, tour 13/14, 4ème étage

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