Séminaire commun LPTENS-LPTHE

Fractional quantum Hall effect and dualities between field theories in 2+1 dimensions - II

Dam Thanh Son

U. of Chicago

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Résumé

A wide array of phenomena occurring in quantum Hall fluid can be explained by postulating a new quasiparticle - the composite fermion. The previous field theory of the composite fermion, the Halperin-Lee-Read theory, suffers from the lack of particle-hole symmetry. I will describe a new theory, known as the ”Dirac composite fermion theory,” which solves the problem of particle-hole symmetry and reveals deep connections to novel dualities between field theories in 2+1 dimensions. I will also describe physical consequences of the Dirac composite fermion theory.

LABORATOIRE DE PHYSIQUE THEORIQUE DE L’ECOLE NORMALE SUPERIEURE
24, RUE LHOMOND
75231 PARIS, CEDEX 05
Tel. : +33-(0)1-44.32.30.00 ou (0)1-44.32.34.83