Séminaire commun LPTENS-LPTHE

Symmetries of Multifractal Spectra and Field Theories of Anderson Localization

Ilya Gruzberg

Univiesity of Chicago

Lundi 18 Juin 2012 à 16:00

LPTENS – conf-IV

Résumé

Single particle wave functions at Anderson transitions are multifraclas whose scaling properties best described by an infinity of critical exponents, the so called multifracta spectra. These multifractal spectra satisfy certain symmetry relations. We uncover the field-theoretical origin of these symmetry relations. We show that they follow from conformal invariance of the critical theory, which implies their general character. Furthermore, we demonstrate that for the Anderson localization problem the entire probability distribution for the local density of states possesses a symmetry arising from the invariance of correlation functions of the underlying nonlinear sigma model with respect to the Weyl group of the target space of the model. We also consider generalized multifractal spectra and their symmetries for composite operators in the sigma model.

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