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SÉMINAIRE du SPP

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The spectral model and its predictions

The spectral model is a pure gravitational action for the product space of the ordinary continuum by a finite geometry F. To remove the arbitrariness in F we classify the irreducibe geometries F consistent with imposing reality and chiral conditions on spinors, to avoid the fermion doubling problem, which amounts to have total dimension 10 (in the K-theoretic sense). It gives, almost uniquely, the Standard Model with all its details, predicting the number of fermions per generation to be 16, their representations and the Higgs breaking mechanism, with very little input. The geometrical model is valid at the unification scale, and has relations connecting the gauge couplings to each other and to the Higgs coupling. This gives a prediction of the Higgs mass of around 170 GeV and a mass relation connecting the sum of the square of the masses of the fermions to the W mass square, which enables us to predict the top quark mass compatible with the measured experimental value. We thus manage to have the advantages of both SO(10) and Kaluza-Klein unification, without paying the price of plethora of Higgs fields or the infinite tower of states.

Lundi 3 décembre 2007 à 15 heures

Salle André Berthelot, bât. 141

Le café sera servi 15 minutes avant

NB : *La présentation d'une carte d'identité ou d'un passeport est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance de leur visite Emilie Chancrin, tél. 01 69 08 23 50 (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).*