Université catholique de Louvain **UCL** SECTEUR DES SCIENCES ET TECHNOLOGIES

INSTITUT DE RECHERCHE EN MATHEMATIQUE ET PHYSIQUE

Invitation à la soutenance publique de thèse

Pour l'obtention du grade de Docteur en Sciences

Madame Priscila MASSETTO de AQUINO MANFRINI

Maîtrise en Sciences Physiques

Beyond Standard Model phenomenology at the LHC

The Standard Model (SM) of the fundamental particles and interaction is one of the most successful theory in physics. In particular, up to the weak scale (a few hundreds *of GeV) it agrees to a great degree with a large set of experimental data. However,* there are several theoretical reasons, such as the so-called ``Hierarchy Problem", as well as experimental ones, such as the neutrino masses and the evidence for dark matter in the Universe, to also expect that something new (particles and/or interactions) could lie at TeV scale. Hints and/or answer(s) to these fundamental questions will be provided by the Large Hadron Collider (LHC), a proton-proton collider running at high energies.

The present thesis aims the exploration of new physics at the LHC through phenomenological studies that employ simulation and computational tools to direct link theories with experimental data. In particular, the focus is on Beyond Standard Model (BSM) theories that can incorporate a quantum description of gravity, such as extra dimensional theories, Supersymmetry and yet a simplified model where the constant of Newton is scale dependent. Phenomenological analyses are performed in which graviton and gravitino emission in combination with multiple jets are investigated at hadron colliders. Inclusive samples are generated by merging matrix element with parton shower descriptions, and validated by a comparison against next-to-leading order QCD calculations. Predictions for relevant observables at the LHC and Tevatron are obtained.

Vendredi 25 mai 2012 à 17h
Arenberg Castle
(auditorium 01.07)
Kasteelpark Arenberg 1
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Membres du jury :
Professeur Fabio MALTONI, promoteur (UCL)
Professeur Antoine VAN PROEYEN, promoteur (KULeuven)
Professeur Frederik DENEF (KULeuven)
Professeur Ben CRAPS (VUB)
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