SEMPARIS – Séminaires en région parisienne

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Seminaire du LPTENS

Mercredi 29 Mars 2017, 11 :00
LPTENS, Conference room 4
Domaines : hep-th

Titre : *Effective action from M-theory on twisted connected sum G_2-manifolds*

Orateur : **Albrecht Klemm (Bonn University)**

Résumé : *We study the four-dimensional low energy effective N=1 supergravity theory of the dimensional reduction of M-theory on G_2-manifolds, which are constructed by Kovalev's twisted connected sum gluing suitable pairs of asymptotically cylindrical Calabi–Yau threefolds $X_{L/R}$ augmented with a circle S^1. In the Kovalev limit the Ricci-flat G_2-metrics are approximated by the Ricci-flat metrics on $X_{L/R}$ and we identify the universal modulus — the Kovalon — that parametrizes this limit. We observe that the low energy effective theory exhibits in this limit gauge theory sectors with extended supersymmetry. We determine the universal (semi-classical) Kähler potential of the effective N=1 supergravity action as a function of the Kovalon and the volume modulus of the G_2-manifold. This Kähler potential fulfills the no-scale inequality such that no anti-de-Sitter vacua are admitted. We describe geometric degenerations in $X_{L/R}$, which lead to non-Abelian gauge symmetries enhancements with various matter content. Studying the resulting gauge theory branches, we argue that they lead to transitions compatible with the gluing construction and provide many new explicit examples of G_2-manifolds.*