中央研究院數學研究所

Institute of Mathematics, Academia Sinica

Taipei Postdoc Seminar

Speaker：葉弘裕 博士 Dr. Hung-Yu Yeh
(Academia Sinica)

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

Abstract：
(joint work with Thaisa Guio, Hans Jockers, and Albrecht Klemm)
We study the four-dimensional low energy effective $\mathrm{N} = 1$ 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 Kovalevton — 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) Kahler potential of the effective $\mathrm{N} = 1$ supergravity action as a function of the Kovalevton and the volume modulus of the G_2-manifold. This Kahler potential fulfills the noscale 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.

Time：11:00 – 12:30, Wednesday, Oct. 11, 2017

Venue：Room 638, Astro-Math. Buidling (NTU Campus)

Organizer：Chih-Wei Chen (NCTS), Jyun-Ao Lin (Academia Sinica)

Refreshment：10:30

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