Scale separation in 3D orientifold flux vacua

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Abstract

Scale separation between the external spacetime and the internal compact manifold is a fundamental requirement of any consistent string compactification. In this talk, I will discuss the possibility to realise such a paradigm in the case of 3D reductions of the Type II string on twisted tori including fluxes and a single type of orientifold planes, giving rise to a specific class of 3D gauged supergravities known as RSTU models. Making use of the embedding tensor formalism, we construct the RSTU flux model associated to all possible T-duality frames and systematically chart the landscape of vacua. This results in 56 inequivalent families of AdS_3 and Mkw_3 vacua, which are all perturbative stable and exhibit different amount of supersymmetries. Only two AdS_3 vacua, appearing in the Type IIB+O5 duality frame, present full moduli stabilisation and scale separation. All other vacua do not stabilise all the moduli and fail to realise scale separation even assuming an additional stabilisation mechanism.

Keywords: Scale separation, flux compactification, orientifold

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