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Geometry of Type IIA compactifications with (non-)geometric fluxes

Thursday, 27 June 2024 14:30 (15 minutes)

We study the phenomenological usefulness of including geometric and non-geometric fluxes to the flux-induced scalar potential for type IIA orientifolds. The resulting potential presents a bilinear structure, which we use to explore two topics: scale separation and the search of dS vacua. First, we generalize the construction of scale-separated vacua in massless Type IIA compactified on an SU(3)-structure manifold with geometric fluxes. We propose new infinite families of vacua based on elliptic fibrations with metric fluxes. They display parametric scale separation, achieved by an asymmetric flux rescaling. Second, we perform an analytical exploration of de Sitter conditions in type IIA compactifications with (non-)geometric fluxes. We find four conditions that the scalar fields and fluxes must satisfy to achieve dS vacua, extending previous results in the literature. We then impose an Ansatz in which the F-terms are proportional to the respective Kähler derivatives. In this set-up we are able to derive additional constraints and to classify the possible dS no-go scenarios.

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