Effective Potentials, Warping, and F-Term Uplifts

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Abstract

I will discuss warping corrections to the scalar potential of type-IIB orientifold models with fluxes. Such effects may be crucial for F-term uplifting, which in turn may be of decisive importance for the unsolved problem of de Sitter in string theory. I will explain how, using a systematic inverse-volume expansion, the 4d off-shell potential in the presence of warping and non-ISD fluxes can be derived. This corresponds to integrating out all massive KK modes. I will also discuss a corresponding proposal for a warped Kahler potential in 4d N=1 supergravity. Eventually, this can be applied to KKLT and LVS. In the case of KKLT, it turns out that warping corrections as well as mixed corrections involving non-ISD fluxes and quantum effects are dominant. This renders the scenario effectively uncontrollable with current methods. By contrast, in the LVS these corrections are found to be suppressed by inverse powers of the volume, such that F-term uplifting looks promising.

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