

The Tadpole Problem

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Mardi 24 Mai 2022 à 14:30

LPENS – L361 (24 rue Lhomond) AND zoom

Résumé

I will discuss string theory compactifications where a large number of moduli is stabilized by fluxes. I will first present a conjecture which rules out the stabilization of all complex-structure moduli in F-theory at a generic point in moduli space by fluxes that satisfy the tadpole cancellation condition. Evidence for this conjecture comes from studying $K3 \times K3$ compactifications using evolutionary algorithms. Subsequently, I will discuss obstructions on flux compactifications coming from AdS/CFT holography. Here, I will argue that it is not possible to obtain KKLT-like AdS vacua with very small cosmological constants by putting a bound on the central charge of the dual theory. These results have important consequences for the construction of de Sitter vacua in string theory.