

Asymptotic flux vacua and the Swampland

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The Swampland constraints can be often understood as a quantum gravity obstruction to restore global symmetries at infinite field distance. This constrains the physics near the large field limits by requiring the presence of new light states but also constraining the form of the kinetic terms, gauge couplings and the scalar potential of the effective theory. In this talk, I will focus on the scalar potential and the structure of flux vacua at the asymptotic regions of the complex structure moduli space of M-theory compactified on a Calabi-Yau fourfold. Interestingly, we can use powerful mathematical theorems to derive the asymptotic form of the flux induced scalar potential near any large field limit and check the Swampland conjectures. We classify all possible two large field limits in Calabi-Yau fourfolds and check that the potential never admits deSitter vacua at parametric control.

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