

Instanton Corrections and Emergent Strings

Wednesday, 15 January 2020 17:45 (15 minutes)

We study limits of infinite distance in the moduli space of 4d $\mathcal{N} = 2$ string compactifications, in which instanton effects dominate. We first consider trajectories in the hypermultiplet moduli space of type IIB Calabi-Yau compactifications. We observe a correspondence between towers of D-brane instantons and D-brane 4d strings, such that the lighter the string the more relevant the instanton effects are. The dominant instantons modify the classical trajectory such that the lightest D-brane string is boosted to a tensionless regime, while the other strings are prevented to go below the fundamental string tension. This tensionless string is dual to a weakly-coupled fundamental type IIB string, and realises the Emergent String Conjecture in this setup. We also consider the vector multiplet moduli space of type I string theory on $K3 \times T^2$. We find that quantum corrections may turn a decompactification limit to an emergent string limit, consistently with existing results in dual setups.

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