

EFT strings and dualities: a bottom-up perspective

Tuesday 8 July 2025 14:42 (17 minutes)

The bottom-up origin of the Swampland Distance Conjecture (SDC) and its relation to string dualities remains an open puzzle. In 4d $\mathcal{N} = 1$ theories, the existence of $\frac{1}{2}$ -BPS EFT string solutions provides a bottom-up realization of these infinite distance limits. In this presentation, I will explore an intriguing integer scaling relation between EFT strings becoming asymptotically tensionless, the light towers of the SDC, and the emergence of perturbative duality frames. I will show that this scaling implies a unique arrangement of light towers along different moduli space directions, determined solely by the 4d EFT data—without requiring knowledge of the precise string embedding. Remarkably, these predictions coincide with known string constructions, hinting at yet another instance of string universality. This key observation allows us to reverse the logic and formulate a set of bottom-up criteria that predict how SDC towers are distributed in moduli space. I will conclude by discussing how these results can be used to constrain candidate Kähler potentials in 4d effective theories.

Presenter: GRIECO, Alessandra

Session Classification: Parallel Session 1