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Misaligned SUSY in String Vacua

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A concrete possibility for String Phenomenology consists in the study of vacua in which supersymmetry is broken at the string scale. Unfortunately such scenarios are often plagued by instabilities coming from tadpoles and perturbative corrections that modifies the background geometry. Although the fate of these vacua is not known in general, they rely on absence of tachyons in the tree level spectrum, thus being classically stable. However the situation could be much worse and indeed in literature vacua giving rise to tachyons from SUSY breaking are well known, for which any further perturbative analysis is meaningless.

In this talk I will show how the sector averaged sum, a quantity encoding the global behaviour of the spectrum at large mass defined by Dienes and refined by Cribiori, Tonioni, Parameswaran and Wrase, is well suited to distinguish the two situations for closed string vacua, although not being able to describe cases in which both open and closed tachyon is projected out through an orientifold realization. A model independent proof of the previous statements along with explicit 10d and 9d examples will be provided.

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