

Testing the weak gravity conjecture in type I strings with broken supersymmetry

Thursday, 23 May 2019 17:35 (20 minutes)

I will discuss tests of the weak gravity conjecture in the presence of supersymmetry breaking, performed in the framework of type I string theory with supersymmetry broken by compactification (à la Scherk-Schwarz). Such a (perturbative string theory) setting allows for the presence of runaway potentials (here for the compactification radius), which is the only possibility if one accepts the non-existence of de Sitter vacua, thus enabling one to test the mutual consistency of the weak gravity and the de Sitter conjectures.

Although the weak gravity conjecture is valid in the decompactification limit, for fixed values of the radius there are short-ranged attractive D1 brane-brane interactions, which would naively imply a violation of the weak gravity conjecture for the associated Ramond-Ramond 2-form. I will argue however that at one-loop level the effective tension of the branes decreases such that there is a long-ranged repulsive force, which should come from higher-loops. The conclusion is that the weak gravity conjecture should be respected provided that the string coupling is not extremely small.

Primary author: Mr BONNEFOY, Quentin (Centre de Physique Théorique - École Polytechnique)

Presenter: Mr BONNEFOY, Quentin (Centre de Physique Théorique - École Polytechnique)

Session Classification: Formal Field Theory and Strings

Track Classification: Formal Field Theory and Strings