

Virtual TEP Seminar

UCLA

Tuesday, June 1st @ 4:00PM

Via Zoom

“Sharp Boundaries for the Swampland”

Dalimil Mazac (IAS)

Abstract: I will discuss the problem of bounding higher derivative couplings in consistent weakly coupled gravitational theories. The starting point will be general assumptions about analyticity and Regge growth of the S-matrix. Higher derivative couplings are expected to be of order one in the units of the UV cutoff. I will explain how to justify this expectation and prove precise bounds on the order one coefficients. The difficulties presented by the graviton pole can be overcome by measuring couplings at small impact parameter, rather than in the forward limit. I will illustrate the method in theories containing a massless scalar coupled to gravity, and in theories with maximal supersymmetry. My talk will be based on <https://arxiv.org/pdf/2102.08951.pdf>