Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 21 Fevrier 2019, 11:40

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The String Swampland and Emergence of Global Symmetries

Consistency with quantum gravity can have significant consequences on low energy physics. Interestingly, it seems that not every effective field theory can be consistently coupled to quantum gravity unless it satifies some additional consistency constraints dubbed Swampland constraints. In this talk, I will revisit such constraints and their emergence as a quantum gravity obstruction to restore global symmetries. I will then focus on the Swampland Distance Conjecture for which infi

nite distances in field space imply an infi

nite tower of states becoming exponentially light. We present new string theory evidence for this conjecture in Calabi-Yau manifolds, by studying the monodromy discrete symmetries associated to the infinite distance singularities in the moduli space. This monodromy generates an infinite orbit within the spectrum of BPS states and allow us to classify the different types of infinite distance loci. We apply the results to the complex structure and Kahler moduli spaces of Type II and M/F-theory compactifications.

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