Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 3 Décembre 2020, 15:00

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Adventures in Non-Supersymmetric String Theory

It has long been known that there exist strings with supersymmetry on the world sheet, but not in spacetime. These include the well-known Type 0 strings, as well as a series of seven heterotic strings, all of which are obtained by imposing unconventional GSO projections. Besides these classic examples though, relatively little is known about the full space of non-SUSY theories. One of the reasons why non-SUSY strings have remained understudied is the fact that nearly all of them have closed string tachyons, and hence do not admit ten-dimensional flat space as a stable vacuum. The goal of this talk is two-fold. First, using recent advances in condensed matter theory, we will reinterpret GSO projections in terms of topological phases of matter, thereby providing a framework for the classification of non-SUSY strings. Having done so, we will show that for all non-SUSY theories in which a tachyon exists, it can be condensed to give a stable lower-dimensional vacuum. In many cases, these stable vacua will be two-dimensional string theories already known in the literature.

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