Supersymmetry breaking and Large Extra Dimensions

Leonardo Bersigotti*[1]

[1]Max Planck Institute for Physics – Föhringer Ring 6, D-80805 Munich, Germany, Germany

Abstract

We investigate whether the absence of experimental signals for supersymmetry and extra dimensions can be understood as a correlated phenomenon. Assuming the Gravitino Conjecture, we study the relation between the gravitino mass and the Kaluza–Klein scale in four-dimensional N = 1 supergravity from Type II compactifications with large extra dimensions. We parametrize the scaling of the full internal volume with respect to a large p-cycle volume through an anisotropy exponent α, and derive the corresponding volume contributions to the Kähler potential. This leads to constraints on the scaling exponent n linking the gravitino mass to the KK scale and to the number αp of effective large extra dimensions. We find that the linear relation n = 1 is compatible only with one or two micron-sized extra dimensions.

Keywords: supersymmetry breaking, large extra dimensions, supergravity, gravitino

*Speaker