

Phenomenological consequences from the equivalence between two-brane worlds and noncommutative two-sheeted spacetimes

We show that at low energy, any multidimensional universe containing two branes can be described as a two-sheeted spacetime in the formalism of the noncommutative geometry. This equivalence implies a model-independent phenomenology.

Matter swapping between two branes is predicted through fermionic oscillations at very low energy. This phenomenon can be experimentally studied with present-day technology and could allow to test the braneworld hypothesis. An experimental setup is suggested, which relies on the Hänsch frequency-comb technique and the use of a polarized ultracold neutron gas.

Some tracks are also suggested to study the phenomenological consequences at the typical energy scale involved in modern colliders.

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