

Planck 2013 From the Planck Scale to the Electroweak Scale

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Phenomenology of Bulk Higgs-Radion Mixing

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The discovery of the Higgs candidate boson last year offers a new tool to investigate BSM physics. Models with warped extra dimensions involve an additional scalar, the radion, which can mix with the Higgs. This mixing has been previously considered for Higgses localised on the infrared brane. We extend these studies to two further classes of models: those with a bulk Higgs, and gauge-Higgs unification scenarios where the Higgs is part of a five-dimensional vector field. We demonstrate how the relevant mixing terms can be generated by loop effects, and in particular how this is related to the breaking of gauge symmetry for gauge-Higgs unification models. We further constrain the radion mass and mixing using the observed Higgs production and branching ratios. Finally we consider additional LHC signals that might shed light on these models.

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