

Low scale gravity mediation in warped extra dimensions and collider phenomenology on hidden sector

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We propose a model of low scale gravity mediated supersymmetry breaking in Randall-Sundrum type warped extra dimensions. In our setup, both of the visible sector and the hidden sector (supersymmetry breaking sector) co-exist on infrared (IR) brane. Supersymmetry breaking is transmitted through non-renormalizable contact interactions among visible and hidden sector fields as the same as in the conventional minimal supergravity scenario in four dimensions. However, due to the warped metric, the effective cutoff scale on the IR brane is “warped down”, and, as a result, the contact interactions among the visible and hidden sector fields are enhanced. We investigate collider phenomenology in the case with the IR cutoff scale around 10 TeV. We find a possibility that hidden sector fields, if they are light enough, can be produced at future colliders, LHC and ILC. Interestingly, main production processes are similar to those for Higgs boson with comparable production cross sections, while their decay processes are quite different and provide us with clean signatures.

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