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Supersymmetry in AdS_5

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Supersymmetric models are subject both to direct constraints from collider searches and to indirect limits from electroweak observables such as the Higgs mass and flavor-changing processes. A minimal scenario consistent with current experimental data suggests a supersymmetric spectrum with a split sfermion sector. Such a spectrum can naturally be realized when supersymmetry is broken in a warped geometry where the sfermion spectrum is related to the Standard Model fermion mass hierarchy. We present a supersymmetric model constructed in AdS_5 compactified over an orbifold that predicts a sfermion mass spectrum with an inverted Yukawa coupling hierarchy. Gauginos and Higgsinos are typically several TeV, while the third-generation sfermions are around 10 TeV, consistent with the observed 125 GeV Higgs mass. The first- and second-generation sfermions are above 100 TeV, ameliorating the flavor problem. The gravitino, in the keV to GeV mass range, is the LSP, providing a warm dark matter candidate. We explore the rich parameter space of the model and discuss the details of the sparticle spectrum and its calculation.

Summary

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