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Quasi-stable neutralinos at the LHC

In this talk I will present our work on phenomenology of supergravity models with R-parity breaking, in which the gravitino is the lightest superparticle and a bino-like neutralino is the next-to-lightest superparticle. Based on Fermi-LAT constraints on gravitino decays we estimated a lower bound on the neutralino decay length of $c\tau_{\chi_1^0}$ $gtrsim30$ cm. We performed a detailed study on the sensitivity of LHC experiments to R-parity breaking. We found that the LHC can probe a parameter range which is one to two orders of magnitude smaller than the present upper bound obtained from astrophysics and cosmology.

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