

R-Parity-violating supersymmetry

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Accepted 31 August 2005

Available online 18 October 2005

editor: J.A. Bagger

Abstract

Theoretical and phenomenological implications of *R*-parity violation in supersymmetric theories are discussed in the context of particle physics and cosmology. Fundamental aspects include the relation with continuous and discrete symmetries and the various allowed patterns of *R*-parity breaking. Recent developments on the generation of neutrino masses and mixings within different scenarios of *R*-parity violation are discussed. The possible contribution of *R*-parity-violating Yukawa couplings in processes involving virtual supersymmetric particles and the resulting constraints are reviewed. Finally, direct production of supersymmetric particles and their decays in the presence of *R*-parity-violating couplings is discussed together with a survey of existing constraints from collider experiments.

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PACS: 12.60.Jv; 11.30.Fs

Keywords: Supersymmetry; Supersymmetric models; *R*-parity violation; Baryon number; Lepton number; Baryogenesis; Baryon asymmetry; Renormalization group equations; Electroweak precision measurements; Dark matter; Neutrino mass and mixing; Flavour changing neutral currents; *CP* violation; Proton decay; Collider phenomenology; Single sparticle production; Sfermion decays; Cascade decays

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