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Supersymmetric Left-Right Models with Gauge coupling unification, Fermion mass Universality and Consistent Cosmology

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We study the Gauge coupling unification as well as fermion mass universality at the GUT scale within the framework of Supersymmetric Left-Right (SUSYLR) models. Depending on the Higgs content, all these models have different mechanisms of generating tiny neutrino masses. We discuss both R-parity conserving as well as R-parity violating SUSYLR models. We also address the issue of domain wall formation in these models when the discrete left-right symmetry gets spontaneously broken. These domain walls, if start dominating the energy density of the Universe will be in conflict with Cosmology. We find that gravity induced higher dimensional operators can make these domain walls disappear at a high energy scale(or at least before big bang nucleosynthesis) provided the left-right symmetry breaking scale obeys certain limits.

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