

## SU(5) Grand Unified Theory in five-dimensional brane world scenario

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We construct a brane world SU(5) Grand Unified Theory in five-dimensional space-time by using domain walls. The SU(5) gauge symmetry is broken down to the Standard Model gauge group by a domain wall configuration. Matters are localized around the domain walls by the so-called Jackiw-Rebbi mechanism while the gauge fields are localized by the non-minimal coupling between the gauge fields and additional scalars. We propose two models for the Higgs sector which give a solution to the doublet-triplet splitting problem. We also derive the four-dimensional effective theory of our model. We show that the Yukawa couplings in the Standard Model are realized from the Yukawa couplings in the five-dimensional theory through the renormalization group equation analysis with an appropriate choice of parameters.

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