



Contribution ID: 121

Type: **not specified**

Magnetized orbifold models of dynamical supersymmetry breaking

Wednesday, 13 July 2016 09:10 (20 minutes)

Magnetic fluxes in extra dimensional space can be an origin of the flavor structure of the standard model. In particular, in higher-dimensional supersymmetric Yang-Mills (SYM) theories compactified on magnetized orbifolds, several MSSM-like models were constructed successfully.

In this work, we derive dynamical supersymmetry breaking models from a single SYM theory compactified on magnetized orbifolds to combine with the MSSM-like models mentioned above. In magnetized orbifold models, essential structure of dynamical supersymmetry breaking mechanism, such as, field contents, their couplings and the number of flavors of $SU(N)$ gauge theory, is completely determined by the structure of extra dimensional space. We research configurations of the magnetic fluxes and orbifold projections in a systematic way. As the result, we found several suitable configurations to generate the dynamical supersymmetry breaking. Furthermore, in some of the obtained configurations, orbifold projections eliminate all of extra massless modes which will cause problems in phenomenology of particle physics and cosmology.

We also discuss its association with other sectors, such as, the MSSM sector and moduli stabilization mechanisms.

Summary

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Session Classification: Parallel V

Track Classification: Inflation and alternatives, Strings, Cosmology