

Joint Theory Seminar

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Electroweak Symmetry Breaking and Collider phenomenology in Gauge-Higgs Unification Scenarios in Warped Extra Dimensions

I will show how to compute the Coleman Weinberg effective potential for the Higgs field in RS Gauge-Higgs unification scenarios based on a bulk $SO(5) \times U(1)_X$ gauge symmetry, with gauge and fermion fields propagating in the bulk and a custodial symmetry protecting the generation of large corrections to the T parameter and the coupling of the Z to the bottom quark. I will demonstrate that electroweak symmetry breaking may be realized, with proper generation of the top and bottom quark masses for the same region of bulk mass parameters that lead to good agreement with precision electroweak data in the presence of a light Higgs. I will compute the Higgs mass and demonstrate that for the range of parameters for which the Higgs boson has Standard Model-like properties, the Higgs mass is naturally in a range that varies between values close to the LEP experimental limit and about 160 GeV. I will also briefly discuss the possible detection of the first excited state of the top, t_1 , which tends to have a higher mass than the ones accessible via regular QCD production processes. However, the detection of these particles is still possible due to an increase in the pair production of t_1 induced by the first excited state of the gluon, G_1 .

Monday, May 12, 2008
11:00 AM - Room 432 PHY/GEO