Area Seminar

Title	Lepton masses and Flavour violation in Randall Sundrum Model
Date and Time	07/02/2013 16:00:00
Speaker	Abhisek Iyer IISc, Bangalore
Area	Theoretical Physics
Venue	Room No. 469

Abstract

Lepton masses and mixing angles via localization of 5D fields in the bulkare revisited in the context of Randall-Sundrum models. The Higgs is assumed to be localized on the IR brane. Three cases for neutrino masses are considered: (a) The higher dimensional LH.LH operator (b) Dirac masses (c) Type I see-saw with bulk Majorana mass terms. Neutrino masses and mixing as well as charged lepton masses are fit in the first two cases using chi-square minimisation for the bulk mass parameters, while varying the O(1) Yukawa couplings between 0.1 and 4. Lepton flavour violation is studied for all the three cases. It is shown that large negative bulk mass parameters are required for the right handed fields to fit the data in the LH LH case. This case is characterized by a very large Kaluza-Klein (KK) spectrum and relatively weak flavour violating constraints at leading order. The zero modes for the charged singlets are composite in this case and their corresponding effective 4-D Yukawacouplings to the KK modes could be large. For the Dirac case, good fitscan be obtained for the bulk mass parameters, ci, lying between 0 and 1. However, most of the `best fit regions' are ruled out from flavour violating constraints. In the bulk Majorana terms case, we have solved the profile equations numerically. We give example points for inverted hierarchy and normal hierarchy of neutrino masses. Lepton flavor violating rates are large for these points. We then discuss various minimal flavor violation (MFV) schemes for Dirac and bulk Majorana cases. In the Dirac case with MFV hypothesis, it is possible to simultaneously fit leptonic masses and mixing angles and alleviate lepton flavor violating constraints for Kaluza-Klein modes with masses of around 3 TeV. Similar examples are also provided in the Majorana case.