



Contribution ID: 45

Type: **Non-Invited Talk**

Vacuum Induced CP Violation Generating a Complex CKM Matrix with Controlled Scalar FCNC

Tuesday 27 November 2018 09:35 (35 minutes)

A viable minimal model with spontaneous CP violation in the framework of a Two Higgs Doublet Model is introduced. The model is based on a generalised Branco-Grimus-Lavoura model with a flavoured Z_2 symmetry, under which two of the quark families are even and the third one is odd. The lagrangian respects CP invariance, while the vacuum has a CP violating phase, which is able to generate a complex CKM matrix. Scalar mediated flavour changing neutral couplings are carefully studied, pointing in particular to a deep connection between the generation of a complex CKM matrix from a vacuum phase and the appearance of scalar FCNC. The scalar sector is also presented in detail, showing that the new scalars are necessarily lighter than 1 TeV. A complete analysis of the model including the most relevant constraints is performed, showing that it is viable and that it has definite implications for the observation of New Physics signals in, for example, flavour changing Higgs decays or the discovery of the new scalars at the LHC. Special emphasis is given to processes like $t \rightarrow hc, hu$, as well as $h \rightarrow bs, bd$, which are relevant for the LHC and the ILC.

Content of the contribution

Theory

Primary author: Dr NEBOT GOMEZ, Miguel (CFTP-IST Lisbon)**Presenter:** Dr NEBOT GOMEZ, Miguel (CFTP-IST Lisbon)**Session Classification:** Plenary**Track Classification:** [5] Discrete symmetries and models of flavour mixing