Scalars 2019

Contribution ID : 52

b -> sl+l- Transitions in THDM with generic Yukawa couplings

Saturday 14 Sep 2019 at 09:30 (00h15')

Content :

I will present our results on $b\to s\mu^+\mu^-$ transitions and possible correlations with the anomalous magnetic moment of the muon (a_μ) within Two-Higgs-Doublet models with generic Yukawa couplings, including the possibility of right-handed neutrinos. We performed the matching on the relevant effective Hamiltonian and calculated the leading one-loop effects for $b\to s\ell\ell^{(\prime)}$, $b\to s\gamma$, $\Delta B=\Delta S=2$, $b\to s\nu\bar\nu$ and $\ell\to\ell^\prime\gamma$ transitions in a general R_ξ gauge. Concerning the phenomenology, we found that an explanation of the hints for new physics in $b\to s\mu^+\mu^-$ data is possible once right-handed neutrinos are included. If lepton flavour violating couplings are allowed, one can account for the discrepancy in a_μ as well. However, only a small portion of parameter space gives a good fit to $b\to s\mu^+\mu^-$ data and the current bound on $h\to\tau\mu$ requires the mixing between the neutral Higgses to be very small if one aims at an explanation of a_μ.

Summary :

I will show that a THDM with generic Yukawa couplings can account for both the discrepancy of the anomalous magnetic moment and the anomalies in bsll, only if right handed neutrinos are introduced.

Primary authors : Dr. WIEGAND, Christoph (University of Bern) ; CRIVELLIN, Andreas (PSI) ; Dr. MÜLLER, Dario (PSI Villingen, Zürich U)

Co-authors :

Presenter : Dr. WIEGAND, Christoph (University of Bern)

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