

bsll Transitions in Two-Higgs-Doublet Models

Thursday, 23 May 2019 14:20 (20 minutes)

We studied $b \rightarrow s\mu^+\mu^-$ 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 $b \rightarrow s\ell\ell^{(\prime)}$, $b \rightarrow s\gamma$, $\Delta B = \Delta S = 2$, $b \rightarrow s\nu\bar{\nu}$ and $\ell \rightarrow \ell'\gamma$ transitions in a general R_ξ gauge. Concerning the phenomenology, we find that an explanation of the hints for new physics in $b \rightarrow s\mu^+\mu^-$ 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 $b \rightarrow s\mu^+\mu^-$ data and the current bound on $h \rightarrow \tau\mu$ requires the mixing between the neutral Higgs bosons to be very small if one aims at an explanation of a_μ .

Primary authors: Dr CRIVELLIN, Andreas (PSI, Zurich University); Mr MÜLLER, Dario (PSI, Zurich University); Dr WIEGAND, Christoph (University of Bern)

Presenter: Dr WIEGAND, Christoph (University of Bern)

Session Classification: BSM in Flavor Physics

Track Classification: BSM in Flavor Physics