# CP Violation In and Beyond The Standard Model

Two Higgs Doublet Model Type II Corrections to Flavour Observables

Matthew Rossetter

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Durham University
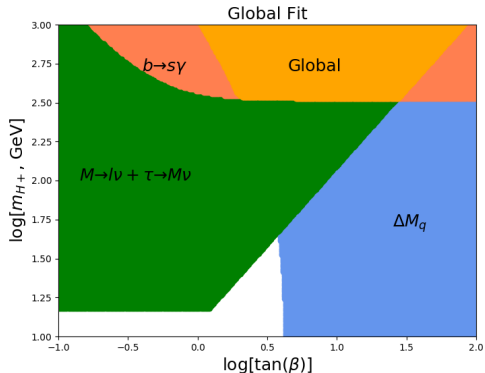
# The Standard Model

# Unsolved Problems of the Standard Model

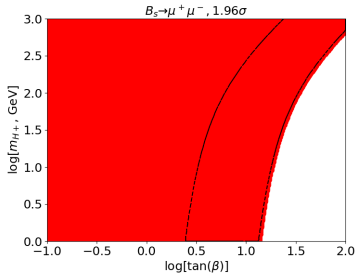# Why Two Higgs Doublet Model?

# First Inputs

- $1\sigma$ scan
- Leptonic, mixing, and radiative
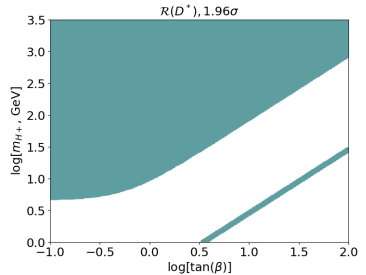- No real constraint on $\tan\beta$
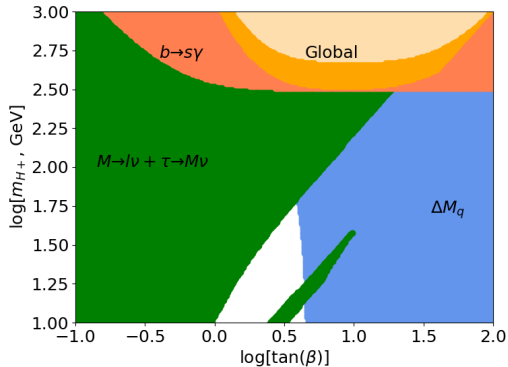- $m_{H^+} > 340\,\text{GeV}$

# New Inputs

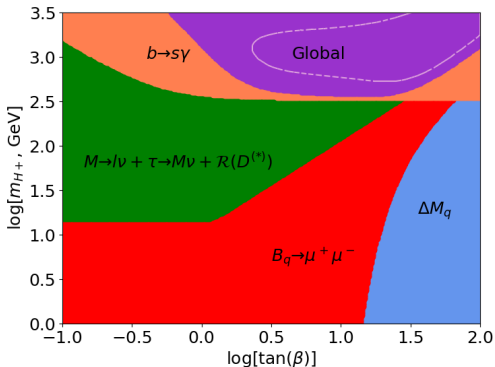➤ $B_s \to \mu^+ \mu^-$



➤ $R(D^{(*)})$ BOTH

# Statistical Fitting of Scans

# Extended Global Fit

- 95% CL: $m_{H^+} > 390\,\text{GeV}$
- $1\sigma$: $m_{H^+} > 530\,\text{GeV}$
- $\tan\beta \gtrsim 2$

# CKM Element Modifications

# Four Generations?

# SM4 with 2HDM Type II

# Any Questions?

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