

Low tan beta MSSM Predictions for $B_s \rightarrow \mu^+ \mu^-$ at the LHC

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One of the most promising signals of new physics at colliders is the rare decay $B_s \rightarrow \mu^+ \mu^-$. The LHC will be the first experiment to directly probe this loop- and helicity- suppressed decay channel down to the Standard Model prediction. Deviations from the predicted branching ratio are a signature of new particles in the loops. In particular, it is well known that the MSSM prediction scales as $(\tan \beta)^6$ due to the supersymmetric Higgs penguin diagrams, making this a fertile testing-ground for SUSY. In this study we analyse the MSSM prediction for $B_s \rightarrow \mu^+ \mu^-$ in the hertofore unexplored low tan beta region of the MSSM parameter space where interference with the box and Z-penguin diagrams could cause the branching ratio to dip below the Standard Model prediction. This decay is particularly important since it could be the first unambiguous signal of new physics at the LHC and also guide the future LHCb upgrade.

Talk, Poster, or Talk & Poster

Talk

Author: Mr TANEDO, Philip (Durham University / IPPP)

Co-authors: Prof. DEDES, Athanasios (University of Ioannina); Prof. ROSIEK, Janusz (University of Warsaw)

Presenter: Mr TANEDO, Philip (Durham University / IPPP)

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