

Bottom-quark Fusion Processes at the LHC for Probing Z' Models and B-meson Decay Anomalies

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Anomalies in B-meson decays reported by the LHC experiment suggest a violation of lepton universality. This could be explained by introducing a heavy neutral gauge boson Z' that selectively couples to third generation quarks and second generation leptons. While the performance of experimental searches for such models is good for large Z' masses, the low-mass region sensitivity is adversely affected by large SM background (mostly Drell-Yan).

In this study, we present a novel approach searching for a Z' decaying to muons in association with at least two jets at least one of which is bottom-tagged. We demonstrate that regions of model parameter space can be probed that current inclusive analyses are insensitive to.

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