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Implications for New Physics in $b \to s\mu\mu$ transitions after recent measurements by Belle and LHCb

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We present a Bayesian analysis of the implications for new physics in semileptonic $b \to s$ transitions after including new measurements of R_K at LHCb and new determinations of R_{K^*} and $R_{K^{*+}}$ at Belle. We perform global fits with 1, 2, 4, and 8 input Wilson coefficients, plus one CKM nuisance parameter to take into account uncertainties that are not factorizable. We infer the 68\% and 95.4\% credibility regions of the marginalized posterior probability density for all scenarios and perform comparisons of models in pairs by calculating the Bayes factor given a common data set. We then proceed to analyzing a few well-known BSM models that can provide a high energy framework for the EFT analysis. These include the exchange of a heavy $Z^{'}$ boson in models with heavy vector-like fermions and a scalar field, and a model with scalar leptoquarks. We provide predictions for the BSM couplings and expected mass values.

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