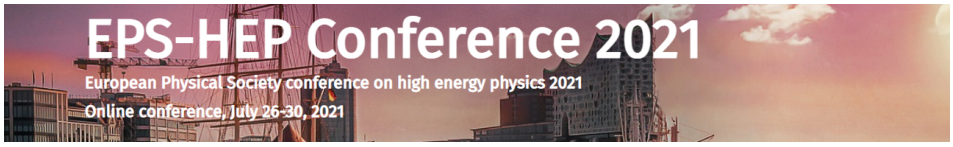

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New Physics in $b \to s\,\nu\,\bar{\nu}$ decays ?

Measurements of various lepton flavor universal observables in $b \to s\,l^+l^-$ transition decays continue to disagree with the standard model expectations. The recent update of R_K measurement from LHCb still indicates 3.1σ deviation from the standard model. Similarly, the measurements of other observables such as R_{K^*}, P_5' and $\mathcal{B}(B_s \to \phi\,\mu^+\,\mu^-)$ continue to show disagreement with standard model predictions. It is well known that there exists a very close relation between $b \to s\,l^+l^-$ and $b \to s\,\nu\bar{\nu}$ decays not only in standard model but also in beyond the standard model physics. In beyond the standard model physics these decay processes are related via $SU(2)_L$ gauge symmetry which relates neutrinos to the left handed charged leptons. Moreover, the B decays with $\nu\bar{\nu}$ final state are theoretically cleaner channels than the corresponding $b \to s\,l^+l^-$ neutral transitions as they do not suffer from hadronic uncertainties beyond the form factors such as the non-factorizable corrections and photonic penguin contributions. Hence, we explore $B_s \to (\phi\,,\eta\,,\eta')\,\nu\,\bar{\nu}$ decays mediated via $b \to s\,\nu\,\bar{\nu}$ transitions using the standard model effective field theory formalism. We give predictions of several observables in standard model and in the presence of various new physics couplings.

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Collaboration / Activity

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