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New physics signature in the decays of B-meson to missing particles

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Semileptonic flavor changing neutral current transitions with a pair of neutrinos in the final state are very accurately determined in the standard model. The most recent Belle II result on $B \to K\nu\bar{\nu}$ uses an innovative inclusive tagging technique; this together with previous BaBar and Belle results indicates a possible enhancement in the branching fraction of $B \to K\nu\bar{\nu}$. We have explored the possibilities of such an enhancement as a signal of new physics within several scenarios such as leptoquark and generic Z′ models, which can also explain some of the other tensions observed in neutral as well as charged current B-decays.

Author: MANDAL, Rusa (Siegen University)

Co-authors: BROWDER, Thomas; DESHPANDE, Nilendra (University of Oregon); SINHA, Rahul

Presenter: MANDAL, Rusa (Siegen University)

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