Contribution ID: **373** Type: **Parallel session talk**

Signatures of Light New Particles in $B \to K^{(*)} E_{\rm miss}$

Friday 19 July 2024 17:02 (17 minutes)

Motivated by the remarkable Belle II experimental result on $B \to K\ E_{\rm miss}$, and phenomenological difficulties in accommodating it exclusively in terms of processes with SM neutrino final states, we systematically investigate possibilities that $E_{\rm miss}$ comes not only from the SM neutrinos but also from other light undetected particles. We consider both single scalar or vector particle final states, as well as pairs of scalars, spin $1/2$ or $3/2$ fermions, and vectors, following the approach of Kamenik and Smith [JHEP 03 (2012) 090]. Since several of these possibilities significantly alter the phase space and kinematical distributions of events in the experiments, we consider not only the branching fractions of $calB(B \to K^{(*)} E_{\rm miss})$ but also all available event distributions presented in the Belle II and BaBar analyses, and construct our own likelihood for different NP scenarios using the data from both processes.

Alternate track

1. Quark and Lepton Flavour Physics

I read the instructions above

Yes

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