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Analysing the B->Kvv momentum transfer spectra in terms of light new physics

Thursday 10 July 2025 08:45 (15 minutes)

Motivated by the recent evidence of an excess in the rare decay $B \to K E_{\rm miss}$ presented by the Belle II collaboration we discuss possible new physics (NP) scenarios in which light invisible states participate in flavour-changing $b \to s$ transitions. Based on a model-independent EFT framework to describe the new light states, we study the signatures given by the differential distribution of the $B \to K E_{\rm miss}$ measurement and we present the most likely scenarios. We then describe the potential effects in the $B \to K^* E_{\rm miss}$ branching and longitudinal polarisation fractions showing these observables have a high discrimination power among the different NP explanations. Lastly, we discuss the importance of analysing the momentum transfer spectra when probing extensions of the Standard Model that feature new light degrees of freedom.

Secondary track

T07 - Flavour Physics and CP Violation

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