9th International Conference on High Energy Particle and Nuclear Physics in the LHC Era



Contribution ID: 453

Type: Plenary

Exploring the $B \rightarrow KE_{miss}$ anomaly: Signatures of light new particles

Motivated by the remarkable Belle II experimental result on $B \to K E_{\text{miss}}$ I review the scenarios that could accomodate the observed deviation and how this correlate with constraints coming other observables induced by flavour changing neutral currents. I discuss the phenomenological difficulties in accommodating it exclusively in terms of processes with SM neutrino final state and systematically investigate possibilities that E_{miss} comes not only from the SM neutrinos but also from other light undetected particles. I exhaustively explore the possible new scalar, fermion or vector particles final states and their viability. Since several of these possibilities significantly alter the phase space and kinematical distributions of events in the experiments, I consider not only the branching fractions of but also all available event distributions presented in the Belle II and BaBar analyses, and construct a likelihood for different NP scenarios using the data from both $B \to K^{(*)}E_{\text{miss}}$ and $B_s \to E_{\text{miss}}$ processes.

Author: Dr NOVOA-BRUNET, Martin (IFIC, U. Valencia, CSIC) Presenter: Dr NOVOA-BRUNET, Martin (IFIC, U. Valencia, CSIC)