



Contribution ID: 583

Type: **not specified**

Dark photon and dark Z mediated B meson decays

Thursday 16 May 2024 14:00 (15 minutes)

We study flavor changing neutral current decays of B and K mesons in the dark U(1)D model, with the dark photon/dark Z mass between 10 MeV and 2 GeV. Although the model provides an improved fit (compared to the standard model) to the differential decay distributions of $B \rightarrow K(*)l+l-$, with $l = \mu, e$, and $B_s \rightarrow \phi\mu+\mu-$, the allowed parameter space is ruled out by measurements of atomic parity violation, $K^+ \rightarrow \mu^+ + \text{invisible}$ decay, and $B_s - \bar{B}_s$ mixing, among others. To evade constraints from low energy data, we extend the model to allow for (1) additional invisible ZD decay, (2) a direct vector coupling of ZD to muons, and (3) a direct coupling of ZD to both muons and electrons, with the electron coupling fine-tuned to cancel the ZD coupling to electrons via mixing. We find that only the latter case survives all constraints.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

Authors: HAMMAD, Ahmed (Seoul National University of Science and Technology); Dr RASHED, Ahmed (Shippensburg University of Pennsylvania); DATTA, Alakabha (University of Mississippi); MARFATIA, Danny (University of Hawaii at Manoa); MUKHERJEE, Lopamudra (University of Mississippi)

Presenter: RASHED, Ahmed (Shippensburg University of Pennsylvania)

Session Classification: Quark and Lepton Flavor Physics

Track Classification: Quark and Lepton Flavor Physics