Contribution ID: **1302** Type: **Flavor**

New physics in $b \to se^+e^-$: A model independent analysis

Monday 24 May 2021 14:30 (15 minutes)

The lepton universality violating flavor ratios R_K/R_{K^*} indicate new physics either in $b \to s\mu^+\mu^-$ or in $b \to se^+e^-$ or in both. If the new physics is only $b \to se^+e^-$ transition, the corresponding new physics operators, in principle, can have any Lorentz structure. In this work, we perform a model independent analysis of new physics only in $b \to se^+e^-$ decay by considering effective operators either one at a time or two similar operators at a time. We include all the measurements in $b \to se^+e^-$ sector along with R_K/R_{K^*} in our analysis. We show that various new physics scenarios with vector/axial-vector operators can account for R_K/R_{K^*} data but those with scalar/pseudoscalar operators and with tensor operators can not. We also show that the azimuthal angular observable P_1 in $B \to K^*e^+e^-$ decay is most suited to discriminate between the different allowed solutions.

Summary

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Session Classification: Flavor I