

# Discriminating new physics scenarios in $b \rightarrow s \mu^+ \mu^-$ via transverse polarization asymmetry of $K^*$ in $B \rightarrow K^* \mu^+ \mu^-$ decay

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A global fit to current  $b \rightarrow s l^+ l^-$  data suggest several new physics solutions. Considering only one operator at a time and new physics in the muon sector, it has been shown that the new physics scenarios (I)  $C_9^{\text{NP}} < 0$ , (II)  $C_9^{\text{NP}} = -C_{10}^{\text{NP}}$ , (III)  $C_9^{\text{NP}} = -C_9^{\prime\text{NP}}$  can account for all data in this sector. In order to discriminate between these scenarios one needs to have a handle on additional observables in  $b \rightarrow s \mu^+ \mu^-$  sector. In this work we study transverse polarization asymmetry of  $K^*$  polarization in  $B \rightarrow K^* \mu^+ \mu^-$  decay,  $A_T$ , to explore such a possibility. We show that  $A_T$  is a good discriminant of all the three scenarios. The measurement of this asymmetry with a percent accuracy can confirm which new physics scenario is the true solution, at better than  $3\sigma$  C.L.

## Secondary track (number)

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