

# Analysis of local and non-local amplitudes in the $B^0 \rightarrow K^{*0} \mu^+ \mu^-$ decay

Friday 19 July 2024 15:00 (15 minutes)

The  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  decay is mediated via the rare flavour changing neutral current transition  $b \rightarrow s \ell^+ \ell^-$ , and constitute sensitive probes for New Physics (NP), as they are forbidden at tree-level in the SM. Virtual NP contributions can therefore have a large impact, and previous LHCb measurements of the decay have shown interesting tensions with the SM predictions at the level of  $\sim 3\sigma$ . The theoretical interpretation of the anomalies is difficult due to the uncertainties in non-local SM contributions, such as charm-loops  $b \rightarrow s c \bar{c} (\rightarrow \gamma)$ , which could mimic NP effects. This talk discusses the results from a data-driven approach to constraining the size of the charm-loops and other non-local contributions to the  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  amplitude, in the first measurement to parameterise full dimuon invariant mass spectrum. The results are obtained using an integrated luminosity of  $8.4 \text{ fb}^{-1}$  collected by the LHCb experiment.

## Alternate track

1. Strong Interactions and Hadron Physics

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**Author:** ANDERSSON, Martin (University of Zurich (CH))

**Co-author:** VOS, Keri (Nikhef National institute for subatomic physics (NL))

**Presenter:** ANDERSSON, Martin (University of Zurich (CH))

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