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## Full angular analysis of the $B^0 \rightarrow K^{*}(892)^0 \mu^+ \mu^-$ decay in proton-proton collisions at CMS

A complete set of optimized CP-averaged angular observables in the rare flavor-changing neutral-current decay  $B^0 \rightarrow K^{*}(892)^0 \mu^+ \mu^-$ , with  $K^{*}(892)^0 \rightarrow K^+ \pi^-$ , is measured using the full Run 2 dataset of proton-proton collisions at  $\sqrt{s} = 13$  TeV collected by the CMS detector, corresponding to an integrated luminosity of  $140 \text{ fb}^{-1}$ . The analysis is performed in six bins of the dimuon invariant mass squared ( $q^2$ ) over the range  $1.1 < q^2 < 16 \text{ GeV}^2$ , excluding the charmonium resonance regions. Angular parameters are obtained through unbinned maximum-likelihood fits to the reconstructed  $B^0$  candidate mass and three decay angles, with detailed efficiency modeling and background parameterization. The measured observables achieve among the highest precision to date for this decay mode, enabling stringent tests of Standard Model predictions. Comparisons with multiple theoretical calculations reveal local tensions in specific observables, notably  $P'_5$  and  $P_2$ , consistent with anomalies reported by other experiments. These results provide a valuable contribution to the understanding of the  $b \rightarrow sl^+l^-$  processes.

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