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【304】Branching fraction measurement of the rare decay $B^0 \to K\pi\mu^+\mu^-$

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Measurements of $b \to s\mu\mu$ during the last decade show a consistent pattern of deviations with respect to Standard Model (SM) predictions across a large set of observables in various decay modes. The branching fraction measurement of $B^0 \to K^{*0}(892)(\to K\pi)\mu^+\mu^-$, which includes the well studied $K^{*0}(892)$ resonance, show an abundance in the theory predictions with respect to the experimentally measured value. However to date, relatively little is known of the branching fraction of $B^0 \to K\pi\mu^+\mu^-$, where the $K\pi$-system originates from heavier K^* states. To help further our understanding of the mismatch between theory and experiment in $b \to s\mu\mu$ transition, this project will probe the heavier, relatively unexplored part of the $K\pi$-system in $B^0 \to K\pi\mu^+\mu^-$, with a measurement of the muon-mode branching fraction using 9 fb^{-1} of LHCb data.

Theoretical Work

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