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Measurement of the B^0 lifetime using $B^0 \to J/\psi K^{*0}$ decays with the LHCb detector

Wednesday 9 April 2025 11:45 (15 minutes)

A measurement of the effective lifetime in $B^0 \to J/\psi K^{*0}$ decays will be performed utilizing data collected in 2024 with the newly upgraded LHCb Upgrade I detector. Effective lifetime measurements of b-mesons offer a precise probe for weak decays in the Standard Model. These lifetimes can be calculated within the Heavy Quark Expansion (HQE) framework, though precise theoretical predictions are generally limited to ratios of lifetimes. As such, absolute measurements of the effective lifetime serve as important reference points for both Standard Model and New Physics theory models. Furthermore, the well-known decay $B^0 \to J/\psi K^{*0}$ provides an ideal channel to study and validate the performance of the LHCb Upgrade I detector. Preliminary results from ongoing studies toward the measurement of the $B^0 \to J/\psi K^{*0}$ effective lifetime will be presented in this talk.

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