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Searches for rare decays of B mesons into final states including four or six muons at LHCb

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Searches for rare decays of B mesons into final states including four or six muons are performed using proton-proton collision data recorded by the LHCb experiment, corresponding to an integrated luminosity of 5.6 fb^{-1}. These decays are experimental signatures of hierarchical sectors beyond the Standard Model proceeding via flavor-violating heavy vectors and a set of light pseudo-Goldstone bosons $a_{1,2}$ spanning a range of lifetimes. The decay modes of interest are $B_s^0 \to \mu^+\mu^-\mu^+\mu^-$, $B^+ \to K^+\mu^+\mu^-\mu^+\mu^-$, $B_s^0 \to \mu^+\mu^-\mu^+\mu^-\mu^+\mu^-$ and $B^+ \to K^+\mu^+\mu^-\mu^+\mu^-\mu^+\mu^-$. Expected upper limits are set at the 95% confidence level on their branching fractions and in the event of a discovery, they will be measured.

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