

## $B_s \rightarrow \mu\mu\gamma$ decay in the high- $\sqrt{s}$ region

Thursday, 16 February 2023 10:10 (20 minutes)

In this talk, we consider the rare decay channel  $B_s \rightarrow \mu\mu\gamma$ , the radiative counterpart of the very rare  $B_s \rightarrow \mu\mu$  decay, from both theoretical and experimental perspectives. This decay is sensitive to possible new vector couplings in the  $b \rightarrow s\mu\mu$  interaction vertex. Using different form factors parametrizations of the  $B_s \rightarrow \gamma$  transition, we study the differential and integrated branching fractions in the region of high invariant dimuon mass. Additionally, we consider the effective lifetime of  $B_s \rightarrow \mu\mu\gamma$  as a new observable, sensitive to non-SM-like CP violation. In addition, we present the first experimental search of this channel in LHCb, through a partial reconstruction method, and we discuss the possibilities of improving and extending this measurement in Run 2 data, and the prospects using the upcoming Run 3 data.

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**Session Classification:** Young Researchers Session