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## The branching fraction and effective lifetime of $B(s) \rightarrow \mu\mu$ at LHCb with Run 2 data

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In the Standard Model (SM) of particle physics, the branching fraction (BF) and effective lifetime ( $\tau$ ) of the decay  $B_s^0 \rightarrow \mu^+\mu^-$  have been calculated with high precision. Both observables are very sensitive to the existence of new particles entering the decay diagram. As such, they are prime candidates to search for signs of New Physics (NP) in flavour. Since the 80's, experiments have been searching for  $B_s^0 \rightarrow \mu^+\mu^-$  decays. After the LHC Run I, CMS and LHCb combined their data, obtaining the first observation of the  $B_s^0 \rightarrow \mu^+\mu^-$  decay at more than 5 sigma. One year ago ATLAS presented their Run I BF measurement as well. The effective  $B_s^0 \rightarrow \mu^+\mu^-$  lifetime had not been measured by any experiment yet. In this talk, the world's first measurement of the effective lifetime, obtained using LHC Run II data acquired by the LHCb detector, will be presented along with the first observation of the  $B_s^0 \rightarrow \mu^+\mu^-$  decay from a single experiment.

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