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Rare decays at LHCb

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Heavy flavour hadrons decays that proceed through FCNC loops or CKM suppressed diagrams are highly sensitive probes of possible deviations from the Standard Model predictions, and hence can be used to indirectly constrain or reveal New Physics contributions. The LHCb experiment at LHC has access to several important observables that include: the branching ratio of $B_{(s,d)} \rightarrow \mu^+ \mu^-$, $D^0 \rightarrow \mu^+ \mu^-$ and $\tau^{+/-} \rightarrow \mu^+ \mu^- \mu^{+/-}$, the angular distributions in the decay $B^0 \rightarrow K^* \mu^+ \mu^-$ and the lifetime distribution of $B_s \rightarrow \phi \gamma$. Results on some of these studies and related topics will be reported, using the first inverse femtobarn of data collected during the 2010 and 2011 LHC run ($\mathcal{L} = 1 \text{ fb}^{-1}$, ~ 300 [~ 6000] billions of produced b [c] pairs). With such data sample LHCb, having already achieved the world's best sensitivity to the $B_s \rightarrow \mu^+ \mu^-$ decay, will be able to explore a regime where many models of New Physics predict a signal, and make further steps down towards the measurement of the Standard Model value for the branching ratio.