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Searches for very rare decays to purely leptonic final states at LHCb

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We present a review of the searches for very rare decays to muon final states performed at LHCb. Flavour changing neutral current processes, such as $B_s \rightarrow \mu^+ \mu^-$ are highly suppressed in the Standard Model (SM). Such decays therefore allow the contributions from new processes or new heavy particles to significantly modify the expected SM rates. Charged lepton flavour violating processes (LFV), such as the neutrinoless $\tau^+ \rightarrow \mu^+ \mu^-$ decay, have vanishingly small decay rates in the SM, but can be significantly enhanced in extended models. We report that latest results on these channels from the LHCb dataset.

Primary author: ARCHILLI, Flavio (Frascati-LNF)

Presenter: ARCHILLI, Flavio (Frascati-LNF)

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