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b to (s , d) mu mu decays at LHCb

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The flavour changing neutral current processes $b \rightarrow (s,d) \mu \mu$ are highly suppressed in the standard model, and are sensitive to contributions from new particles. The first observation of $B^+ \rightarrow \pi \mu \mu$ is presented, the first $b \rightarrow d \mu \mu$ mode to be measured. Minimal flavour violation (MFV) is the hypothesis that the only source of flavour violation is the Yukawa couplings of the fermions to the Higgs, and is a widely used assumption in New Physics models. A test of MFV in loop diagrams is presented, via a determination of $|V_{td}| / |V_{ts}|$ from the ratio of $B^+ \rightarrow \pi \mu \mu$ and $B^+ \rightarrow K \mu \mu$ branching fractions.

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