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The measurement of R_k
($BF(B^{+-} \rightarrow K^+ \mu^+ \mu^-) / BF(B^{+-} \rightarrow K^+ e^+ e^-)$) using
data collected by LHCb in 2011/2012 to probe physics
beyond the Standard Model

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An analysis to measure the parameter $R_k = BF(B^{+-} \rightarrow K^+ \mu^+ \mu^-) / BF(B^{+-} \rightarrow K^+ e^+ e^-)$ in the dilepton invariant mass squared region $1 < q^2 < 6 \text{ GeV}^2/c^4$ using data collected by LHCb in 2011 and 2012 is presented. R_k is a probe of New Physics providing model-independent constraints on the Wilson Coefficients C_s and C_p complementary to those from the $B(B_s \rightarrow \mu^+ \mu^-)$ measurement from LHCb in 2012. The analysis involves multivariate selections for $B^{+-} \rightarrow K^+ \mu^+ \mu^-$ and $B^{+-} \rightarrow K^+ e^+ e^-$ events. Because of the significant Bremsstrahlung of the electrons in the detector an extensive investigation into the fit model for the $B^{+-} \rightarrow K^+ e^+ e^-$ signal and partially reconstructed background was performed.

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