

New test of Lepton Flavour Universality with rare $\Lambda_b^0 \rightarrow \Lambda \ell^+ \ell^-$ decays at LHCb

Friday, 4 November 2022 14:40 (20 minutes)

Over the past few years, interest in the $b \rightarrow s \ell^+ \ell^-$ transition has grown due to its contribution to measurements that show hints of lepton flavour universality violation. Lepton flavour universality (LFU) is the uniform behaviour of the electron, muon and tau leptons under the electroweak interaction and is an intrinsic characteristic of the Standard Model (SM). The $b \rightarrow s \ell^+ \ell^-$ transition is governed by the Flavour Changing Neutral Current (FCNC) and is extremely suppressed in the SM, making this a rare decay. Hence, making this LFU measurement a sensitive test to possible extensions to the SM, collectively referred to as New Physics (NP). Yet, so far the measurements are limited to meson decays and thus Λ_b^0 , the first baryon decay in which LFU will be measured, could provide further insight in the observed anomalies. The search of possible violation of LFU will be done by measuring R_Λ , the ratio between $\Lambda_b^0 \rightarrow \Lambda \mu^+ \mu^-$ and $\Lambda_b^0 \rightarrow \Lambda e^+ e^-$ decays.

Primary author: DE BOER, Jan

Presenter: DE BOER, Jan

Session Classification: Parallel