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Development of a new B-Physics trigger for the ATLAS Detector at CERN (student talk)

Saturday, 17 February 2018 11:45 (15 minutes)

A novel B-Physics trigger for the ATLAS detector is being developed to enable lepton universality studies by selecting $B^0 \to K^* e^+ e^-$ events and complementing the existing $B^0 \to K^* \mu^+ \mu^-$ trigger. In the Standard Model, lepton universality refers to the fact that the electroweak couplings of the leptons to the gauge bosons is independent of the lepton flavour. A particular sensitive probe for studying lepton universality is by measuring the ratio ($R_{K^{*0}}$) of the branching fractions of $B^0 \to K^{*0} \mu^+ \mu^-$ and $B^0 \to K^{*0} e^+ e^-$ decay processes. The value of $R_{K^{*0}}$ is expected to be close to unity in the Standard Model. However, recent analyses have shown an intriguing deviation from the expected value of $R_{K^{*0}}$. The development of the $B^0 \to K^* e^+ e^-$ trigger is critical to the measurement of the ratio. Summary of ongoing work will be presented in the talk.

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