Study of Electroweak Penguin B Decays at Belle II Experiment

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Abstract

The $b \to sll$ $(l = e, \mu)$ transition is a flavour-changing neutral current process that mediates through one-loop penguin or box diagrams. The decay is considered to be a good probe for the New Physics as particles predicted in the beyond Standard Model theories can enter into the loop. The exclusive decay $B \to K^{(*)} l^+ l^-$ was first observed by the Belle experiment, and it provides many observables such as the branching fraction, *CP* asymmetry and forward-backward asymmetry and other angular observables. Recently, the LHCb experiment has reported some clue of a lepton universality violation from the branching fraction ratio of the $B \to K\mu^+\mu^-$ and $B \to Ke^+e^-$ decays. In this presentation, we report the status of the analysis of the $B \to Kl^+l^-$ decay at the Belle II experiment which started the data taking in 2019. We also present an activity at the Belle II Chulalongkorn University group where we study the $B \to KJ/\psi$ decay that has the same topology as the $B \to Kl^+l^-$.