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Study of inclusive B meson decays to Ds meson

The dominant process for the decay of a b quark is $b \to cW^{*-}$, resulting in a flavor correlated c quark and a virtual W. The decay of W boson produces either a \bar{u} d or \bar{c} s quark pair,both processes are Cabibbo-allowed and \bar{c} s is suppressed only by a phase-space factor. We present an analysis of inclusive B^- and \bar{B}^0 meson decays to correlated D_s^+ X and anti-correlated D_s^- X using Belle II simulated data sample corresponding to integrated luminosity of 1 ab^{-1} at the $\Upsilon(4S)$ resonance. Events are selected by completely reconstructing one B meson and searching for a bound state with charm quark in the rest of the event. Reconstruction and selection of reconstructed B are performed in FEI (Full Event Interpretation). This study provides the evidence for correlated D_s^+ production, which is not well-understood and less common process. This will help us deepen our understanding and improve old measurements on $\bar{B} \to D_s X$.

Field of contribution

Experiment

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