

Exclusive (semi-)leptonic B meson decays at Belle

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We report a search for B decays into invisible final states. The signal is identified by fully reconstructing the accompanying B meson and requiring no other charged particles and no extra energy deposited in the calorimeter. The upper limit obtained will be reported and the corresponding physics will be discussed.

We report measurements of the $B \rightarrow D_s^{(*)} K \ell \nu$ decay branching fractions and of the characteristics of the $D_s^{(*)} K$ system.

We report a measurement of $B \rightarrow \tau \nu$ decays. A sample of $B\bar{B}$ pair events are tagged by reconstructing one B meson decaying to hadronic final states. We obtain the branching fraction of $B \rightarrow \tau \nu$ and present a direct determination of the product of the B meson decay constant f_B and the magnitude of the Cabibbo-Kobayashi-Maskawa matrix element V_{ub} . We also discuss constraints on the charged Higgs.

The branching fractions of the purely leptonic decays $B^+ \rightarrow \ell^+ \nu_\ell$, ($\ell = e, \mu$) are expected to be very small due to helicity suppression in the Standard Model. With contributions from new physics beyond the Standard Model, helicity suppression may be avoided. Moreover, these modes have a very clean experimental signature. In this study, we present a search for $B^+ \rightarrow \ell^+ \nu_\ell$ decays using the hadronic B -meson tagging method, where a novel technique of neural-network-based B -meson tagging method is applied for the optimal background suppression.

We also report a study of the charmless semileptonic B-meson decays $B^+ \rightarrow \eta \ell^+ \nu$ and $B^+ \rightarrow \eta' \ell^+ \nu$, in events in which the decay of one B meson is fully reconstructed in an hadronic final state.

These results are obtained from the large data sample collected at the $\Upsilon(4S)$ resonance with the Belle detector at the KEKB asymmetric-energy e^+e^- collider.

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