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Search for D and B leptonic decays at Belle

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We search for the flavor-changing neutral current decays D0 −> muˆ+ muˆ- and D0 −> eˆ+eˆ-, and for the lepton-flavor violating decays D0 −> eˆ(+-) muˆ(-+) using a large data sample collected with the Belle detector at the KEKB asymmetric-energy eˆ{+}eˆ{-} collider. We find no evidence for any of these decays. We obtain significantly improved upper limits on the branching fractions: BR(D0 −> muˆ{+} muˆ{-})<1.4 x 10ˆ{-7}, BR(D0 −> eˆ+eˆ-)<7.9 x 10ˆ{-8} and BR(D0 −> eˆ{+} muˆ{-})+BR(D0 −> muˆ{+}eˆ{-})<2.6 x 10ˆ{-7} at the 90% confidence level. The purely leptonic decay Bˆ+ −> lˆ+ nu (l = e, mu) is highly suppressed in the Standard Model due to lepton helicity mismatch but can be strongly enhanced in New Physics scenarios. We present the results of a search for the decays Bˆ+ −> eˆ+ nu and Bˆ+ −> muˆ+ nu. We also present a search for B decays into invisible final states. The nu anti-nu signal is identified by fully reconstructing the accompanying B mesons and requiring no other charged particles and no extra energy deposited in the calorimeter.

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