Semileptonic transition of $B \to D^* l \bar{v}$ in noncommutative space - time

M Gholami, M Haghighat, and Gh Khosravi

Department of Physics, Isfahan University of Technology
E-mail: gholami.mohsen@ph.iut.ac.ir

(Received 5 January 2013 ; in final form 11 March 2013)

Abstract

In this paper, we study the noncommutative effect on the semileptonic transition of $B \to D^* l \bar{v}$. We replace the weak interaction vertex in the ordinary space with its counterpart in the noncommutative space. It is shown that, more new form factors are needed to describe the hadronic part of the transition amplitude. All the form factors are obtained at the lowest order of three point QCD sum rule. Consequently, the decay rate of $B \to D^* l \bar{v}$ is calculated and a bound of the order of 4 GeV on $\Delta_{NC}$ is given for $\Gamma_{\exp}(B \to D^* l \bar{v}) = (5.5 \pm 0.5) \times 10^{-2}$.

Keywords: semileptonic transition, noncommutative space, form factor, decay rate

For full article, refer to the Persian section