

Study of semileptonic B decays with scalar mesons in the final state

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We investigate the semileptonic decays $B \rightarrow S \ell \nu_\ell$, where S is the p -wave scalar meson (3P_0), within the framework of the nonrelativistic quark model of Isgur-Scora-Grinstein-Wise. At tree level, we obtain the branching ratios of these decays and examine the contribution of each form factor. In addition, we compare the process $B \rightarrow S \tau \nu_\tau$ with $B \rightarrow P \tau \nu_\tau$, where P denotes a pseudoscalar meson, as well as with the hadronic decays $B \rightarrow S M$, where M denotes a pseudoscalar or vector meson. Moreover, we determine the mixing angle for the physical isoscalar mesons and show the Dalitz plot for these processes.

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