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Title:	Search for $B \rightarrow K + \nu \bar{\nu}$ Decays Using an Inclusive Tagging Method at Belle II
Authors:	Patra, Sourav (/jspui/browse?type=author&value=Patra%2C+Sourav)
Keywords:	Branching fraction Flavor changing neutral currents
Issue Date:	2021
Citation:	Physical Review Letters, 127(18).
Abstract:	A search for the flavor-changing neutral-current decay $B_p \rightarrow K \nu \bar{\nu}$ is performed at the Belle II experiment at the SuperKEKB asymmetric energy electron-positron collider. The data sample corresponds to an integrated luminosity of 63 fb^{-1} collected at the $\Upsilon(4S)$ resonance and a sample of 9 fb^{-1} collected at an energy 60 MeV below the resonance. Because the measurable decay signature involves only a single charged kaon, a novel measurement approach is used that exploits not only the properties of the $B_p \rightarrow K \nu \bar{\nu}$ decay, but also the inclusive properties of the other B meson in the $\Upsilon(4S) \rightarrow B \bar{B}$ event, to suppress the background from other B meson decays and light-quark pair production. This inclusive tagging approach offers a higher signal efficiency compared to previous searches. No significant signal is observed. An upper limit on the branching fraction of $B_p \rightarrow K \nu \bar{\nu}$ of 4.1×10^{-5} is set at the 90% confidence level.
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URI:	https://doi.org/10.1103/PhysRevLett.127.181802 (https://doi.org/10.1103/PhysRevLett.127.181802) http://hdl.handle.net/123456789/4604 (http://hdl.handle.net/123456789/4604)
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