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Search for the rare decay $B \to \Lambda\bar{p}\nu\bar{\nu}$

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We search for the rare flavor-changing neutral current process $B^- \to \Lambda\bar{p}\nu\bar{\nu}$ using data from the BABAR experiment. A total of 424fb^{-1} of e^+e^- collision data collected at the center-of-mass energy of the $\Upsilon(4S)$ resonance is used in this study, corresponding to a sample of $(471 \pm 3) \times 10^6$ $B - \bar{B}$ pairs. Signal $B^- \to \Lambda\bar{p}\nu\bar{n}u$ candidates are identified by first exclusively reconstructing a B^+ decay in one of many possible decays to hadronic final states, then examining detector activity that is not associated with this reconstructed B^- decay for evidence of a signal decay. The data yield is found to be consistent with the expected background contribution under a null signal hypothesis, resulting in an estimated branching fraction of $calB(B^- \to \Lambda\bar{p}\nu\bar{\nu}) = (0.4 \pm 1.1 \pm 0.6) \times 10^{-5}$, where the uncertainties are statistical and systematic, respectively. An upper limit of $calB(B^- \to \Lambda\bar{p}\nu\bar{\nu}) < 3.0 \times 10^{-5}$ at the 90% confidence level is determined.

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