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Measurement of branching fractions and CP asymmetries in Lambda_b0(Xi_b0) -> p KS h- decays

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CP violation plays a crucial role in accounting for the matter–antimatter imbalance observed in the Universe. This talk presents measurements of branching fractions and CP asymmetries in the decays $\Lambda_b^0(\Xi_b^0) \to pK_S^0h^-$, where h^- denotes either a pion or a kaon, using proton–proton collision data collected by the LHCb experiment, corresponding to an integrated luminosity of $9\,\text{fb}^{-1}$. The decays $\Lambda_b^0 \to pK_S^0K^-$ and $\Xi_b^0 \to pK_S^0K^-$ are observed for the first time, with significances reaching eight standard deviations. The integrated CP asymmetries are measured for the $\Lambda_b^0 \to pK_S^0\pi^-$, $\Lambda_b^0 \to pK_S^0K^-$, and $\Xi_b^0 \to pK_S^0K^-$ decays. For the decay $\Lambda_b^0 \to pK_S^0\pi^-$, the CP asymmetries are measured in different regions of the Dalitz plot. No evidence of CP violation is observed in any of the decay modes.

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