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Branching fraction and CP asymmetry measurements in inclusive $B \rightarrow X_s \gamma$ and $B \rightarrow X_s l+l-$ decays

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We use the large dataset collected with the BABAR detector to measure the branching fractions and CP asymmetries of the inclusive decays $B \rightarrow X_s l+l-$ and $B \rightarrow X_s \gamma$. We adopt a sum-of-exclusive-states method, whereby 20 different final states are selected.

The branching fraction and CP asymmetry for $B \rightarrow X_s l+l-$ are measured in intervals of q^2 (di-lepton invariant mass) and also in bins of $m(X_s)$, the hadronic mass. Simulation is used to extrapolate to the fully inclusive rate.

We also report the CP asymmetry for $B \rightarrow X_s \gamma$, and the first measurement of the difference between ACP for charged and neutral decay modes, $\Delta A(X_s \gamma)$. Using the value obtained, we provide 68% and 90% confidence intervals on the imaginary part of the ratio of the Wilson coefficients corresponding to the chromo-magnetic dipole and the electromagnetic dipole transitions.

Summary

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