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Towards a global fit to extract the $B \rightarrow X_s \gamma$ rate and $|V_{ub}|$

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The total $B \rightarrow X_s \gamma$ rate and the CKM-matrix element $|V_{ub}|$ determined from semileptonic B-meson decays play an important role in finding indirect evidence of new physics in the flavor sector of the Standard Model, complementary to the direct searches at LHC and Tevatron. Their determination requires the precise knowledge of the parton distribution function for the b quark in the B-meson (called the shape function). We implement a new model-independent framework for the shape function with reliable theoretical uncertainties based on an expansion in a suitable set of basis functions. This is a significant improvement over using model functions. We present the current status of a global fit to BaBar and Belle data to extract the shape function, the $B \rightarrow X_s \gamma$ rate and $|V_{ub}|$.

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