

# Penguin Pollution in $B^0 \rightarrow J/\psi K^0$ and $B_s \rightarrow J/\psi \phi$ Decays

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The size of the penguin pollution from the u-quark loop is under debate for many years, and this issue must be settled when future precise data on the famous mixing-induced CP asymmetries will be analysed to measure  $\sin(2\beta)$  or  $\beta_s$ . We have calculated the penguin pollution from first principles, using methods of soft-collinear factorisation. (Earlier attempts to do such a calculation for the  $B \rightarrow J/\psi K_S$  branching ratio around 12 years ago had failed. The situation for the penguin pollution, however, is different.)

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