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Time dependent CP-violation in B decays at Belle II

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Time dependent CP-violation phenomena are a powerful tool to precisely measure fundamental parameters of the Standard Model and search for New Physics. The Belle II experiment is a substantial upgrade of the Belle detector and will operate at the SuperKEKB energy-asymmetric e^+e^- collider. The accelerator has already successfully completed the first phase of commissioning and first electron positron collisions in Belle II have just been recorded. The design luminosity of SuperKEKB is 8×10^{35} cm^{-2}s^{-1} and the Belle II experiment aims to record 50 ab^{-1} of data, a factor of 50 more than the Belle experiment. This dataset will greatly improve the present knowledge, particularly on the CKM angles β and α by measuring a wide spectrum of B-meson decays, including many with neutral particles in the final state. In this talk we will present estimates of the sensitivity to β in the golden channels $B \to c\bar{c}s$ and in the penguin-dominated modes $B^0 \to \eta' K^0$, ϕK^0, $K_S\pi^0(\gamma)$. A study for the time-dependent analysis of $B^0 \to \pi^0\pi^0$, relevant for the measurement of α, and feasible only in the clean environment of an e^+e^- collider, will also be given.

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