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Belle II at SuperKEKB, a super B factory

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B factories have successfully confirmed that the Standard Model with the CKM matrix offers a correct description of the quark weak transitions and of CP violation. The next generation B factory (the so called super B factory) will search for New Physics effects by looking for departures from the Standard Model predictions in precision measurements. For such studies, a 50 times larger data sample is needed, corresponding to an integrated luminosity of 50 ab^{-1} . To achieve the necessary increase of event rates by a factor of 40, a substantial upgrade is required both of the accelerator complex as well as of the detector. To maintain the excellent performance of the detector, the critical issue will be to mitigate the effects of higher backgrounds (by a factor of 10 to 20), leading to an increase in occupancy and radiation damage, as well as fake hits and pile-up noise in the electromagnetic calorimeter. Higher event rates require substantial modifications in the trigger scheme, DAQ and computing relative to the current experiments. In addition, improved vertex detection and hadron identification are needed, and similarly good (or better) hermeticity is required.

We will discuss the motivation for a future super B factory at KEK and its expected physics potential, as well as the requirements for the accelerator and for the detector. Finally, the present status of the project will be presented together with the plans for the future.

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