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## Measurement of CKM parameters at Belle II

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The Belle II experiment is a substantial upgrade of the Belle detector; it will operate at the SuperKEKB energy-asymmetric  $e^+e^-$  collider. The detector is in its final phase of construction and the accelerator has successfully completed the first phase of commissioning. The design luminosity is  $8 \times 10^{35} \text{cm}^{-2}\text{s}^{-1}$ , and the Belle II experiment aims to record  $50 \text{ ab}^{-1}$  of data, a factor of 50 more than the Belle experiment. We report our prospects for measuring the CKM angle  $\gamma$  and observables in semileptonic B meson decays linked to the matrix elements  $V_{cb}$  and  $V_{ub}$ .

The CKM angle  $\gamma$  is the least well known of the angles of the unitarity triangle and the only one that is accessible with tree-level decays in a theoretically clean way. The key method to measure  $\gamma$  is through the interference between  $B^+ \rightarrow D^0 K^+$  and  $B^+ \rightarrow \overline{D}^0 K^+$  decays which occur if the final state of the charm-meson decay is accessible to both the  $D^0$  and  $\overline{D}^0$  mesons. To achieve the best sensitivity, a large variety of D and B decay modes is required; the Belle II experiment has the advantage that almost all final states can be reconstructed, including those with photons.

The measurements of rates and other observables in CKM favoured or suppressed semileptonic B meson decays to light leptons (electron and muon) and to the tau lepton, provide a gateway to fundamental parameters of the Standard Model, such as Cabibbo-Kobayashi-Maskawa matrix elements  $V_{cb}$  and  $V_{ub}$  and are sensible to lepton flavour universality violation from physics beyond the Standard Model.

### Experimental Collaboration

Belle II

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