

# The Belle II Experiment: status and physics program

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The Belle II experiment is now under construction at the KEK laboratory in Japan. This project represents a substantial upgrade to both the Belle detector and the KEKB accelerator. The Belle II experiment will record 50/ab of data, a factor of 50 more than that recorded by Belle. This large data set, combined with the low backgrounds and high trigger efficiencies characteristic of an  $e^+e^-$  experiment, should provide unprecedented sensitivity to new physics signatures in B and D meson decays, and in tau lepton decays.

The detector comprises many forefront subsystems. The vertex detector consists of two inner layers of silicon DEPFET pixels and four outer layers of double-sided silicon strips. These layers surround a beryllium beam pipe having a radius of only 10 mm. Outside of the vertex detector is a large-radius, small-cell drift chamber that provides high resolution tracking in a 1.5 T magnetic field. Surrounding this is a state-of-the-art particle-identification detector: the barrel region consists of long quartz bars within which cherenkov photons are radiated. A system of spherical mirrors focuses this light onto finely segmented multi-channel-plate phototubes providing  $<100$  ps timing resolution. The forward endcap region consists of a ring-imaging cherenkov counter (RICH) based on silicon aerogel with a varying index of refraction. Outside of these detectors is a CsI crystal calorimeter with waveform sampling, and outside of this is iron shielding (serving as the magnet yoke) instrumented with scintillating fiber detectors and glass resistive plate chambers in order to identify muons.

The experiment is scheduled to begin physics running in 2018.

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