

Commissioning and Initial Performance of the Belle II iTOP PID Subdetector

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Content

High precision flavor physics measurements are an essential complement to the direct searches for new physics at the LHC. Such measurements will be performed using the upgraded Belle II detector that will take data at the SuperKEKB accelerator. With an anticipated 40-fold increase in the integrated luminosity of KEKB, the detector systems must operate efficiently at much higher rates than the original Belle detector. A central element of the detector upgrade is the barrel particle identification system. Belle II has built and installed an imaging-Time-of-Propagation (iTOP) detector. The iTOP uses quartz as the Cherenkov radiator and the photons are transported down the quartz bars via total internal reflection with a spherical mirror at the forward end to reflect forward-going photons to the backward end, where they are imaged onto an array of segmented Micro-Channel Plate Photo-Multiplier Tubes. The system is readout using Giga-sample per second waveform sampling Application-Specific Integrated Circuits that provide precise photon timing. The combined timing and spatial distribution of the photons for each event are used to determine particle species. A summary of commissioning and current status will be provided.

Summary

Primary author(s) : VARNER, Gary (University of Hawaii)

Presenter(s) : VARNER, Gary (University of Hawaii)

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