

Belle II electromagnetic calorimeter and its performance during early SuperKEKB operation

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The Belle II experiment at the SuperKEKB accelerator complex is the intensity frontier electron-positron colliding beam experiment. The electromagnetic calorimeter consists of the 8736 CsI(Tl) crystals with the attached PIN-photodiodes inherited from the Belle experiment. In order to ensure high rate capability and immunity against beam background, the electronics have been upgraded with waveform sampling readout to provide not only energy deposition but also timing for each crystal hit. Design and construction of the upgraded electronics are reviewed and the performance in the early Belle II physics run is reported. We also present results showing the first application of calorimeter pulse shape discrimination at a B-Factory experiment. This novel technique, enabled by the new waveform sampling electronics, allows for discrimination between electromagnetic and hadronic showers, leading to significant improvements in kaon-long vs. photon separation and charged particle identification.

Primary authors: Prof. MIYABAYASHI, Kenkichi (Nara Women's University); BELLE II ELECTROMAGNETIC CALORIMETER GROUP

Presenter: Prof. MIYABAYASHI, Kenkichi (Nara Women's University)

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