

# Analysis of SiW-ECAL technological prototype beam test with electron beam

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The next-generation Higgs Factory, such as the International Linear Collider (ILC) project, can be a powerful approach to new physics based on Higgs precision measurements. The International Large Detector (ILD) which is one of the detector concept for the ILC is designed to be optimized for the Particle Flow Algorithm (PFA) to enable the most sensitive measurement with the highest sensitivity. The PFA is expected to improve basic particle level reconstruction and energy resolution.

There are two types of candidate for ILD electromagnetic calorimeter, SiECAL and ScECAL. The SiECAL, which we are researching and developing, is a sampling type calorimeter consisting of 30 layers with a silicon pixel sensor for the detection layer and tungsten for the absorption layer. The PFA requires its silicon pixel size of  $5\text{mm} \times 5\text{mm}$ .

In this talk, we will report the results of the SiW-ECAL technical prototype beam test that was conducted from June to July 2019 at DESY in Germany using electron beam (1-5 GeV). In the beam test, there are two main programs: MIP program (without tungsten) and Shower program (with tungsten). The main purpose of the MIP program are energy calibration, pedestal uniformity/stability assessment, TDC operation test, and retriggering verification. On the other hand, The Shower program aims to evaluate energy resolution through beam energy measurement. In addition, FEV13 operation tests such as individual threshold control and auto gain mode were also conducted. We will also report on the current state of simulation research on this beam test.

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