

Light yield and uniformity measurements of different scintillator tiles and first studies of 4th generation Hamamatsu SiPMs

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We present new light yield and uniformity measurements of hexagonal scintillator tiles since they provide a better match to the cells of the SiD electromagnetic calorimeter. They also yield a better signal-to-noise ratio than square tiles. We use three different readout schemes: via a Y11 fiber, a directly coupled SiPM at the center of the tile in a dimple and a SiPM attached to the side of the tile in a dimple. All tiles have an area of 9 cm^2 . Our standard wrapping consists of two layers of Teflon tape at each side and two layers of Tyvec paper for the top and bottom faces. However, we show light yield measurements for different wrappings. We use Hamamatsu S13360 and the fourth generation S14160 MPPCs. For the latter we have measured gain, noise and afterpulsing as a function of the bias voltage. Furthermore, we present light yield and uniformity measurements of ATLAS TileCal tiles with SiPM readout. The goal is to read out the fiber bundle with an MPPC array rather than a PMT.

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Authors: Prof. EIGEN, Gerald (University of Bergen (NO)); LEE, Graham Richard (University of Bergen (NO))

Presenter: Prof. EIGEN, Gerald (University of Bergen (NO))

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