Abstract Submitted
for the APR21 Meeting of
The American Physical Society

SiPM design optimization by TCAD simulation for the dual-readout calorimeter[1] BOBAE KIM, JIK LEE, JUNGHYUN LEE, SEHWOOK LEE, Kyungpook Natl Univ, SANGHYUN KO, Seoul National Univ, DOYEONG KIM, JASON LEE, YUNJAE LEE, JONGSUK PARK, MINSANG RYU, IAN WATSON, University of Seoul, YUN EO, SEUNGKYU HA, KYUYEONG HWANG, KYUNGHO KIM, MINSOO KIM, SUNGWON KIM, JUNEWOO PARK, HWIDONG YOO, Yonsei University — Silicon Photomultipliers (SiPMs) have been developed during recent years for various applications. Thanks to several advantages such as compactness, high gain at low operational voltage, and high detection efficiency, SiPMs are considered as photodetector of the dual-readout calorimeter which consists of scintillating and Cerenkov fibers. The dual-readout method is a novel calorimetry technique that allows the simultaneous measurement of both electromagnetic and hadronic particles in high precision. The compact size of SiPMs makes it possible to couple individual fibers in the calorimeter and the excellent position and energy resolution can be obtained for future lepton collider experiments including FCC-ee and CEPC. For high detection efficiency at the emission wavelength of both fibers and lower correlated noise, SiPM structural optimization is studied using TCAD Sentaurus before production. We present the ideal design concept, its simulation results, and plan.

[1]The EDA tool was supported by the IC Design Education Center(IDEC), Korea.

Bobae Kim
Kyungpook Natl Univ

Date submitted: 07 Jan 2021 Electronic form version 1.4