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Strip based on Scintillation Detector for Dual-Readout High-Granularity Calorimetry (poster-ID99)

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The development of next-generation calorimeter technology for future accelerator experiments is being advanced. As elemental technologies, it aims to integrate two promising calorimeter technologies, “dual readout calorimeter” and “high-granularity calorimeter,” and to realize calorimeter technology with high time resolution. Dual readout technology is realized by stacking layers of Cherenkov light detector and scintillation light detector and reading out each signal. Furthermore, we achieve readout granularity on the order of cm for each detector and high time resolution on the order of 10 ps for the Cherenkov detector. A scintillator detector is coupled SiPM to readout signal. We use strip to realize a high-granularity scintillator detector. By using this means, high granularity and a small number of readout channels can be achieved.

This time, we optimized the design of a strip scintillator assuming a hadron calorimeter. The performance of the detector has light yield and position dependence, so in order to maximize it, we considered the design of the scintillator material, the size, position of SiPM, and readout method, and reported the results of measurements using prototypes.

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