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Development of sampling calorimeter to use information from segmented lead glass absorber with Cherenkov light

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Sampling calorimeter is indispensable for physics measurement at collider experiment with particle flow algorithm.
Particle flow algorithm optimized calorimeter is important not only energy information but also position information.
Position information can be improved by creating a very finely granulated detection layer.
However, energy resolution is degraded by uncertainty of deposit energy in the absorption layer.
This problem will be solved by using lead glass as absorber, which is clear and high density.
High energy charged particles produce Cherenkov lights whose light yield corresponds to the track length in the lead glass.
Because MPPC is very thin, optical readout of this detector is possible with very small dead volume.
Information on absorption layer which absorber is made of segmented lead grass and read by a MPPC as Cherenkov light.
We are developing prototype of sampling calorimeter with segmented lead Glass absorber because this information from the absorber will improve the energy resolution of the calorimeter.
This prototype is being checked and calibrated by cosmic-ray muon.
Performance of this calorimeter prototype will be tested for positron at ELPH beam at Tohoku University will be presented.
We developed the segmented lead glass calibration method with beam in order to guarantee calorimeter uniformity.
We will discuss this prototype problems and its capabilities.

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