

Proton-going ECal design and simulations

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The proton-going Electromagnetic Calorimeter (pECal), situated in the Hadron Endcap alongside the forward Hadronic Calorimeter in the ePIC detector configuration, plays a crucial role in the ePIC scientific program for jet and photon/electron measurements. With an inner radius of 30 cm and an outer radius of 170 cm, the pECal spans a pseudorapidity range from 1.4 to 3.5.

The pECal's primary function is to facilitate the identification of π^0 decay photons up to 50 GeV and the reconstruction of jets with good hadron compensation in the hadron-going direction. Utilizing a sampling calorimeter design with a W-powder/ScFiber (W/ScFi) structure, initially developed at UCLA, this compact configuration efficiently fits within limited space constraints. Notably, the pECal boasts good energy resolution and fine granularity, meeting the stringent requirements of the ePIC scientific program.

During this presentation, I will show the pECal design and discuss the capabilities of the fECal in differentiating π^0 decay photons and identifying heavy-flavor jets from current simulations and machine-learning techniques.

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