

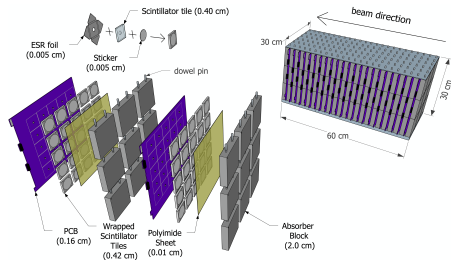
ZDC Calibration

Weibin Zhang

University of California, Riverside

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ZDC Prototype



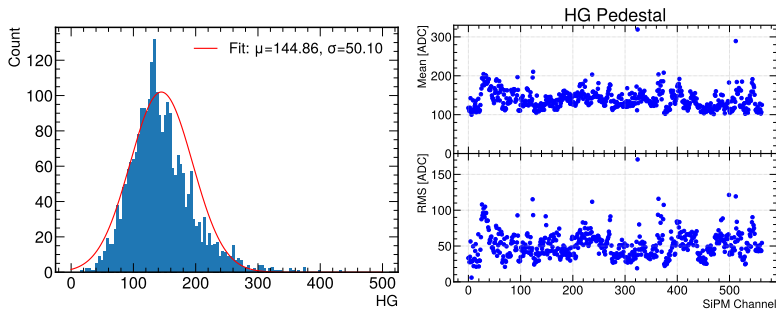
- 23 layers, 25 SiPMs/layer, 575 SiPMs
- Beam test paper: [arxiv: 2512.20852](https://arxiv.org/abs/2512.20852)

DAQ Setup



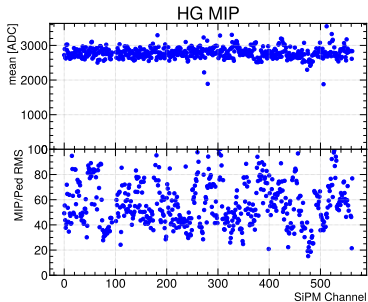
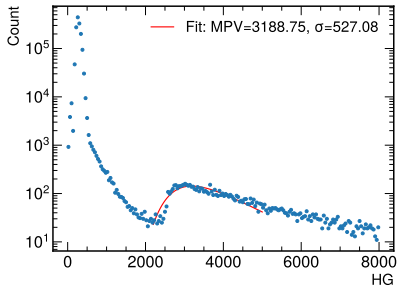
- 9 CAEN units: CITIROC-1A ASIC
- Synchronized by a CAEN concentrator
- DAQ: Janus

Pedestal Extraction



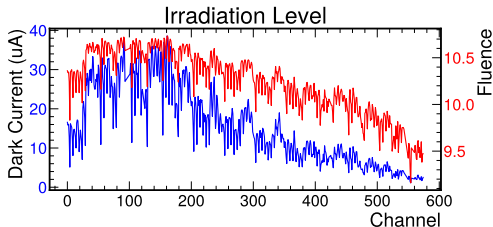
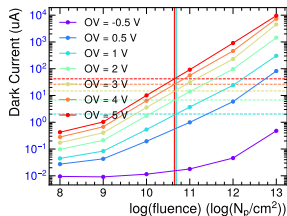
- A Gaussian fit over the pedestal distribution
- Pedestal average: $\sim 150 \pm \sim 50$ ADCS

MIP Extraction



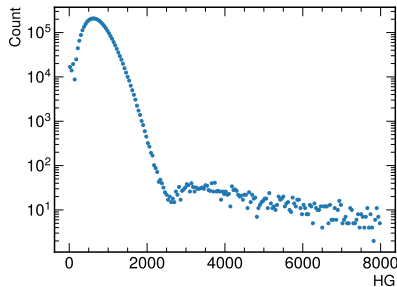
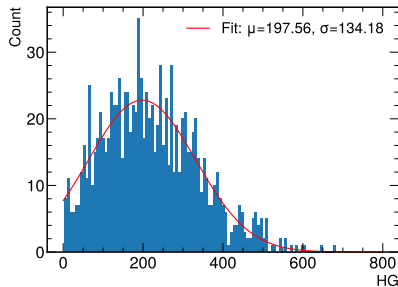
- A Landau fit to extract the MPV
- MIP: ~ 3000 ADCs

Irradiation



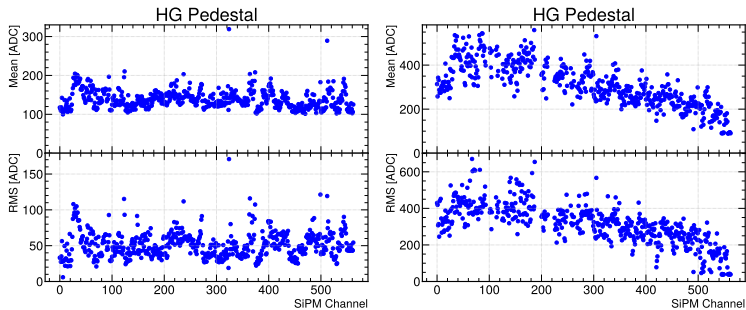
- Irradiation: highest at $\sim 10^{10.6}$ 1-MeV proton/cm², corresponding to one year of running at full nominal luminosity (100 fb⁻¹)

Pedestal and MIP After Irradiation



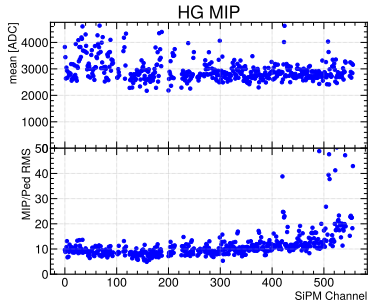
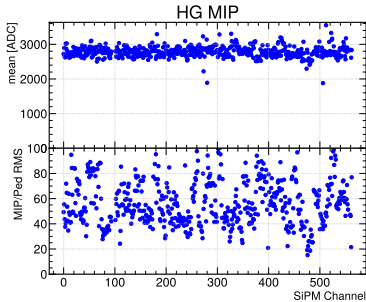
- Much wider pedestal distribution and less significant MIP peak

Pedestal Before and After the Irradiation



- Increased pedestal mean and width

MIP Before and After the Irradiation



- Though of noisier pedestal distribution, the MIP calibration over ped width still is greater than 10

Summary

- A systematic study of SiPM pedestal and MIP calibration under irradiation
- SiPMs keep acceptable performance under nominal EIC luminosity