PSD simulation @ GSSI

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PSD Bar geometry

Bar:
X = 1 cm
Y = 3 cm
Z = 50 cm

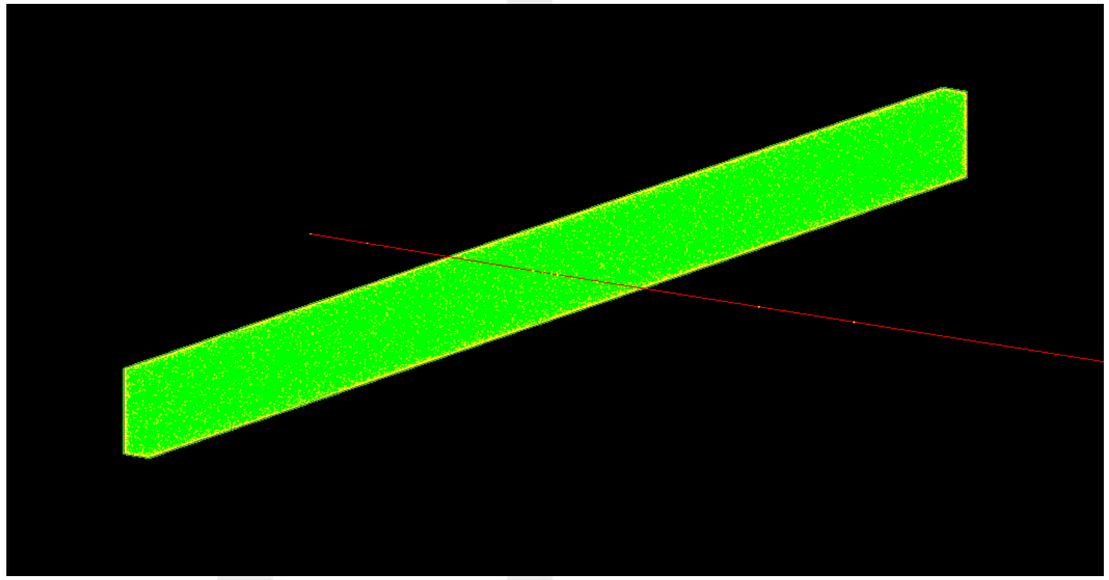
Wrapping:
Thickness = 500 μm

2 SiPMs (one on each side):
X = 3 mm
Y = 3 mm
Z = 0.5 mm

UNDER TEST IN LNGS

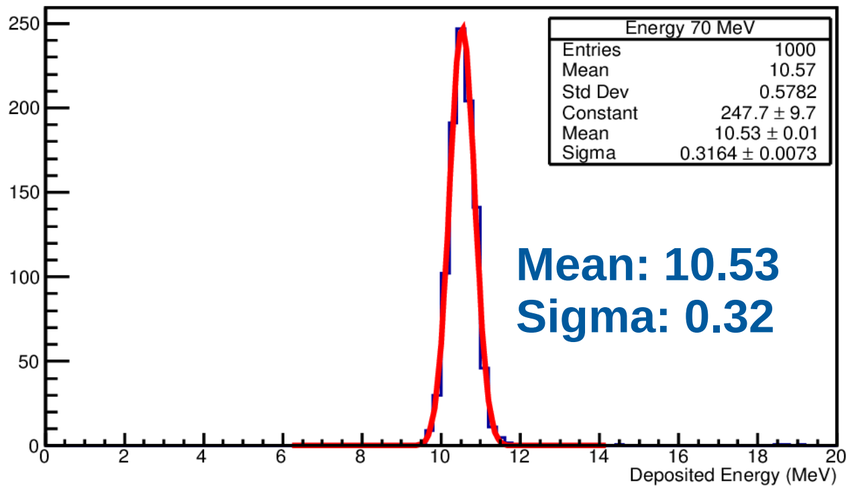
Simulation for CNAO

Particles: Protons
Energy: 70, 120, 170, 226 MeV
Position: (x, y) = (0 ,0)

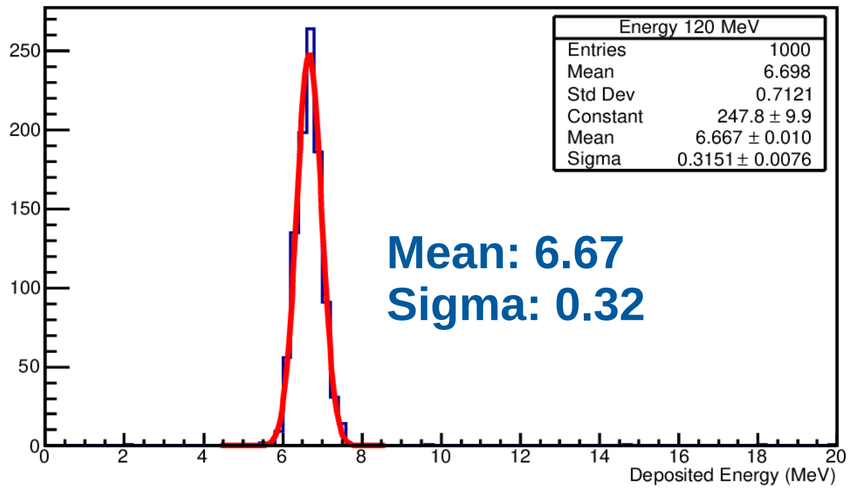


Total deposited energy - Protons

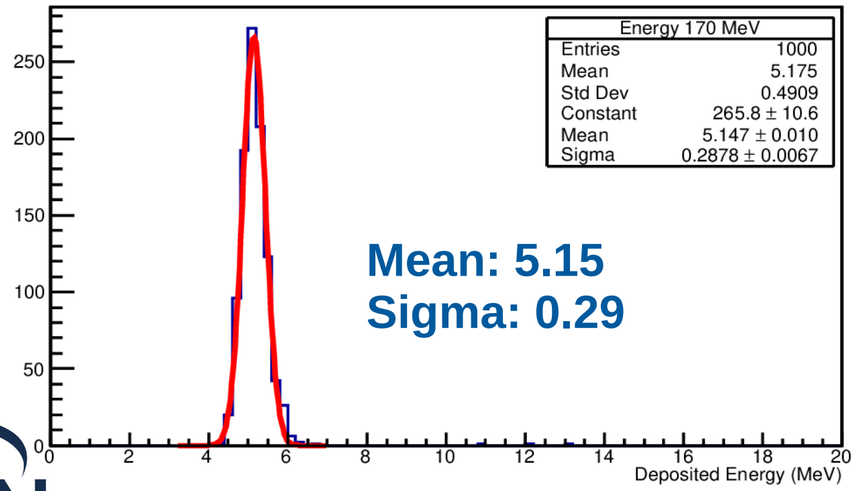
70 MeV



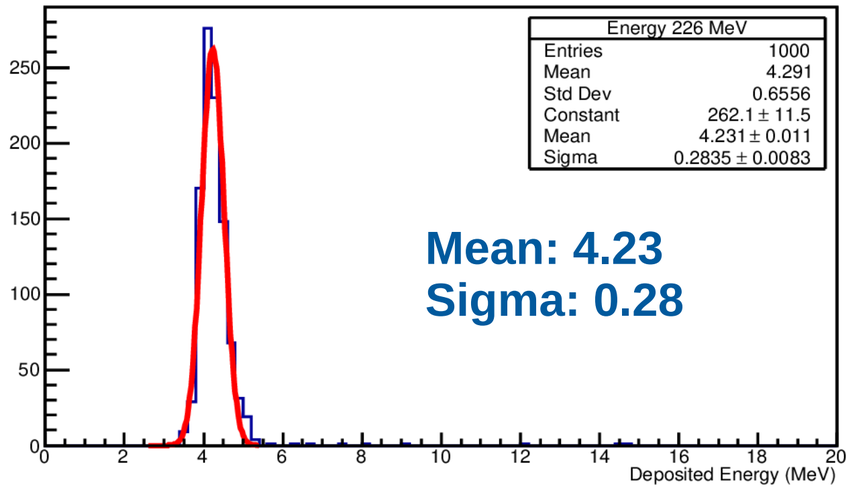
120 MeV



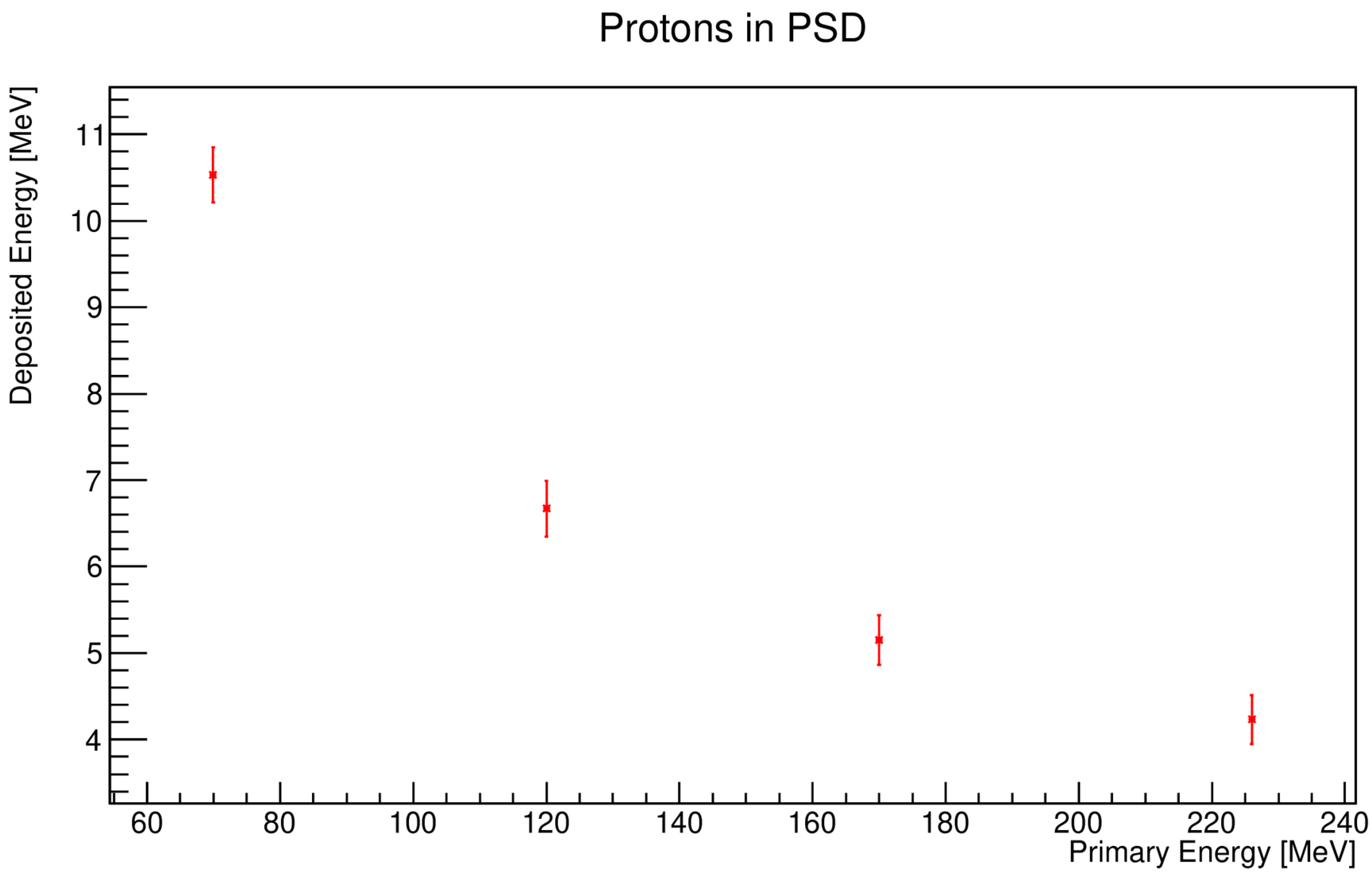
170 MeV



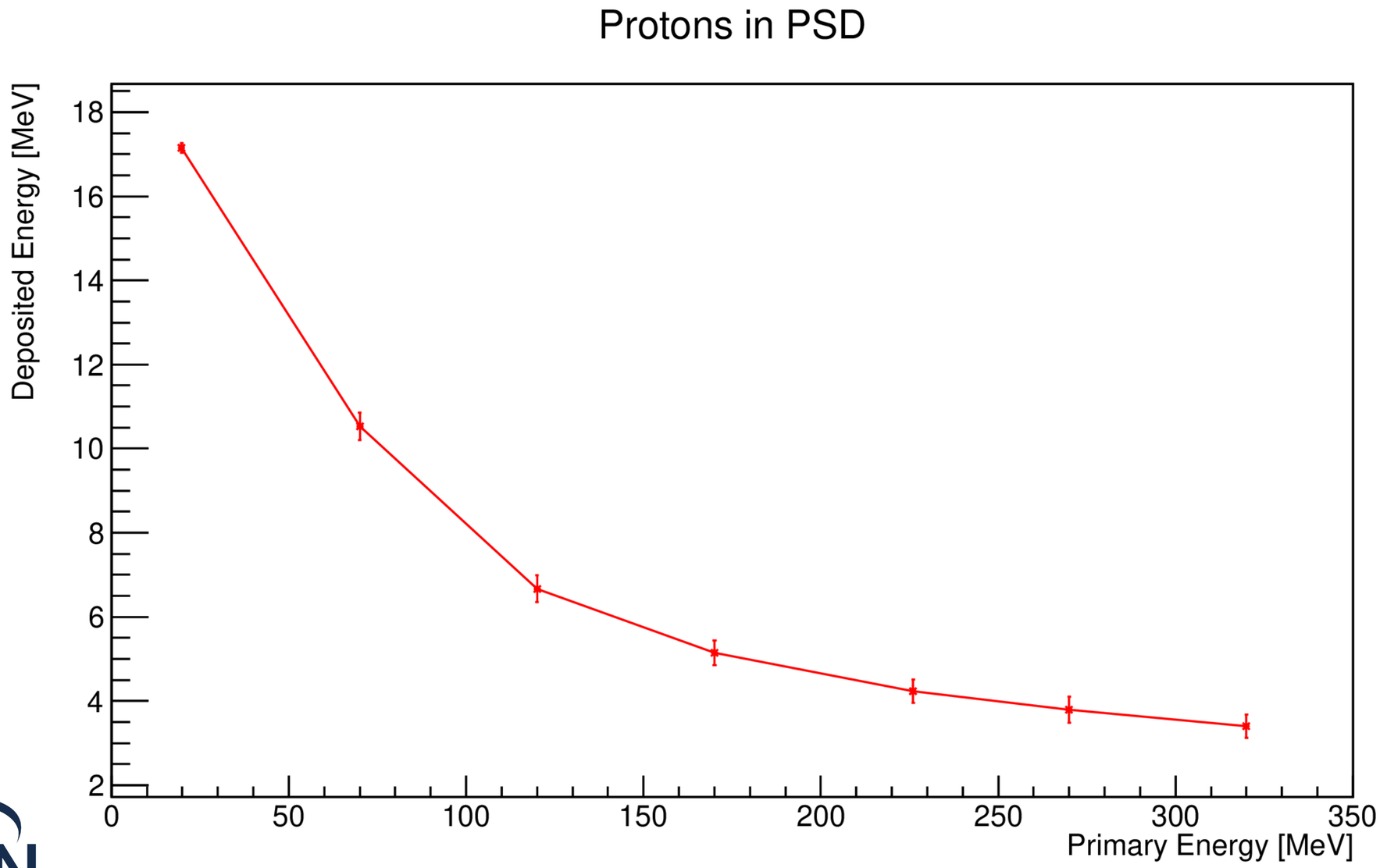
226 MeV



Total deposited energy - Protons



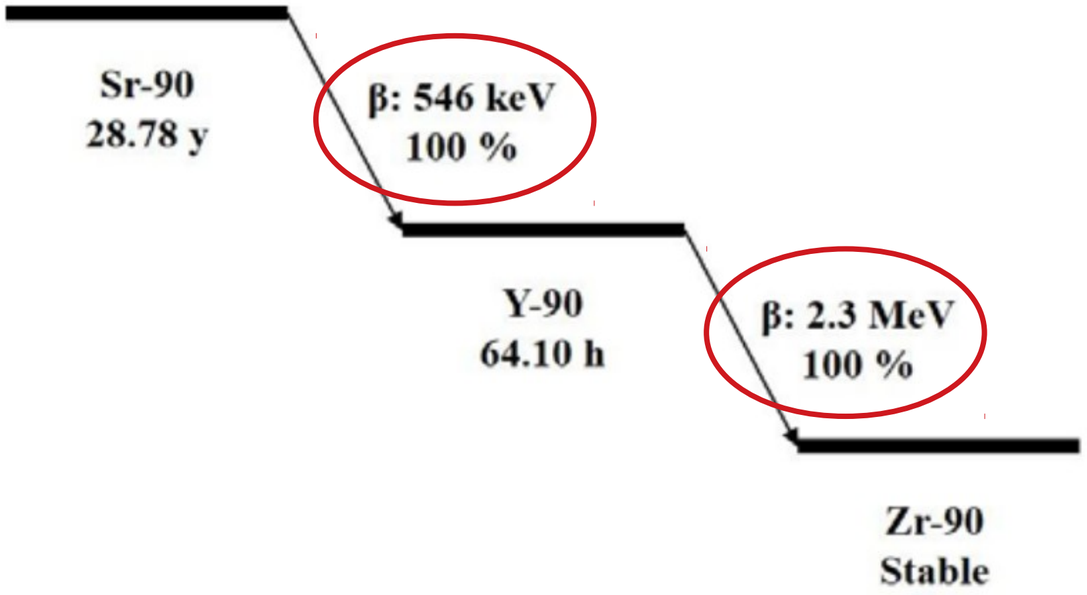
Additional points



Future plan

Test the bar using a radioactive source

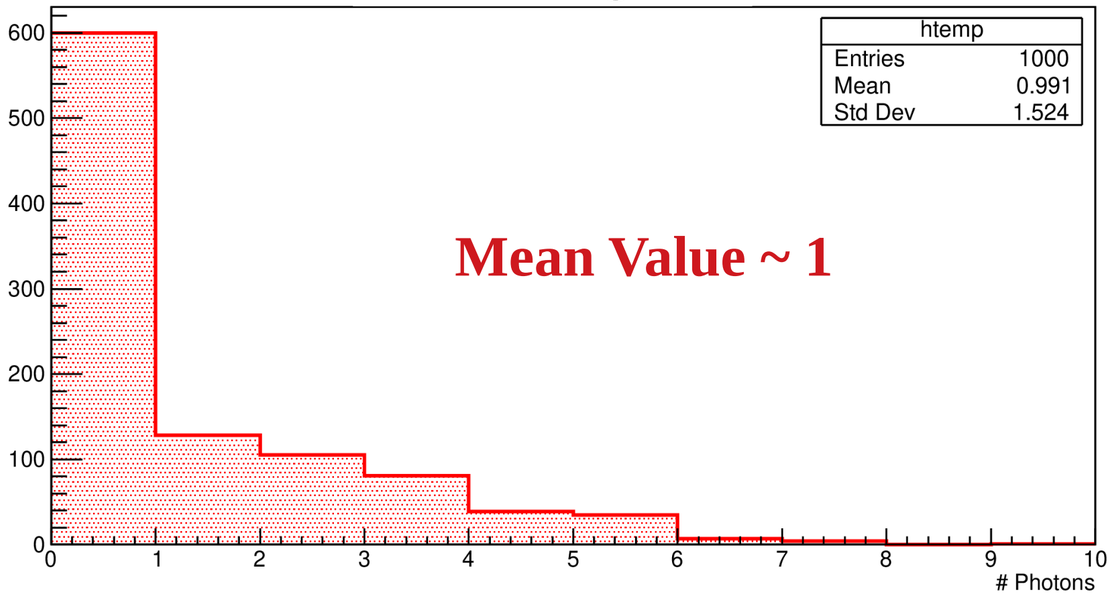
Better then cosmic rays for more precise scanning of the scintillator bar



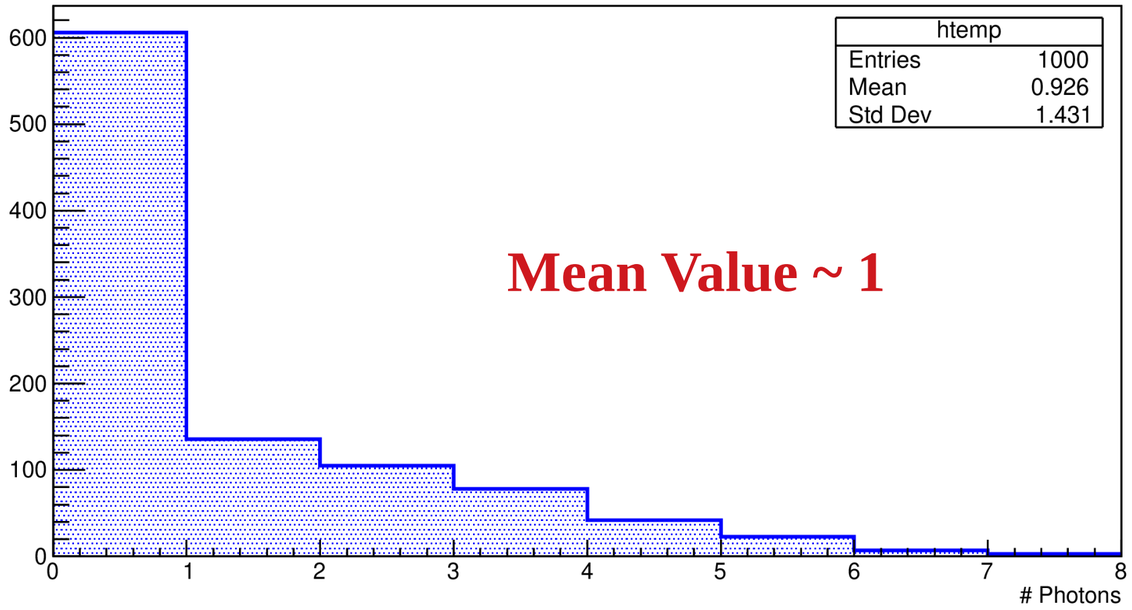
Test with radioactive source

Electrons of 546 keV

SiPM Right



SiPM Left

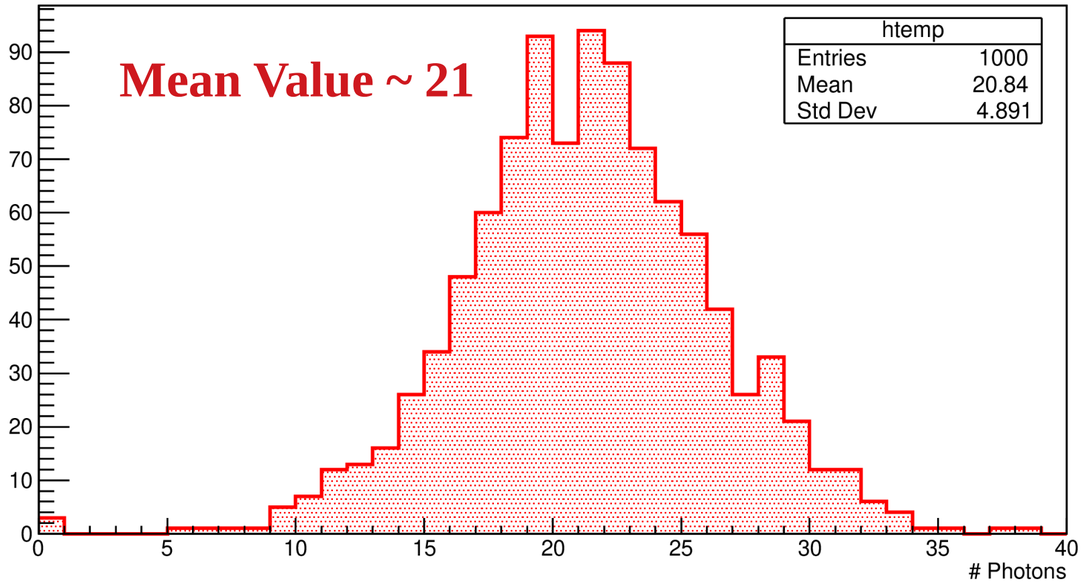


43% PDE

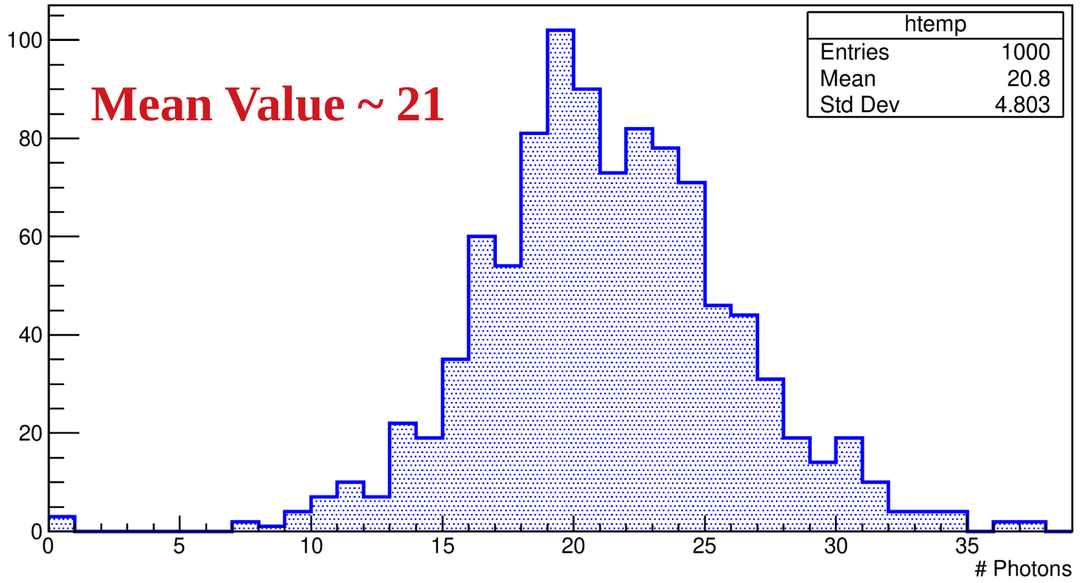
Test with radioactive source

Electrons of 2.3 MeV

SiPM Right



SiPM Left



43% PDE

To do list

- Energy deposited by electrons in the bar
- Comparison between simulation and test in LNGS
- Study the non-linearity of SiPM (saturation) for AdvanSiD ASD – NUV3S