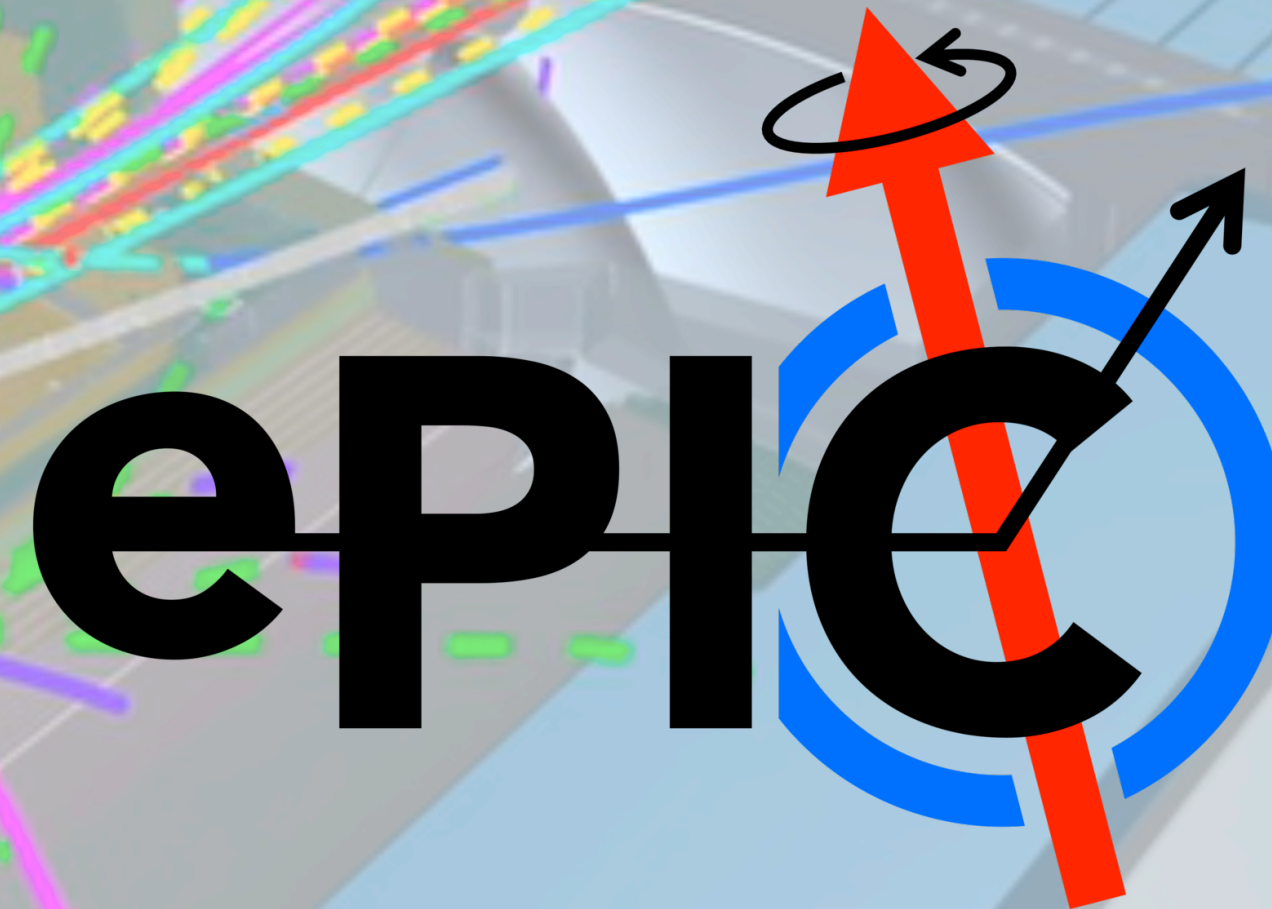


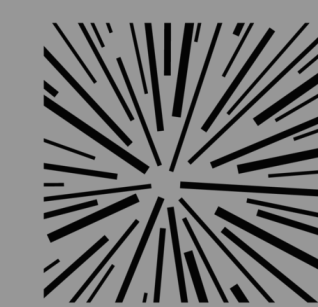
Light Yield Comparison For Moulded vs Machined Tiles

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EPIC

Yale



Wright
Laboratory

Set-up

Digitizer

Using CAEN DT5202 Digitizer

Shaping time = 50ns

Hold delay = 100ns

Vop = 45V [38+ 7 over voltage]

SiPM Information:

Top: S14160-1315 (Trigger with EJ200)

Middle: S14160-1315(4) **Test Tiles**

Bottom: S14160-1315(3) (Trigger with EJ200)

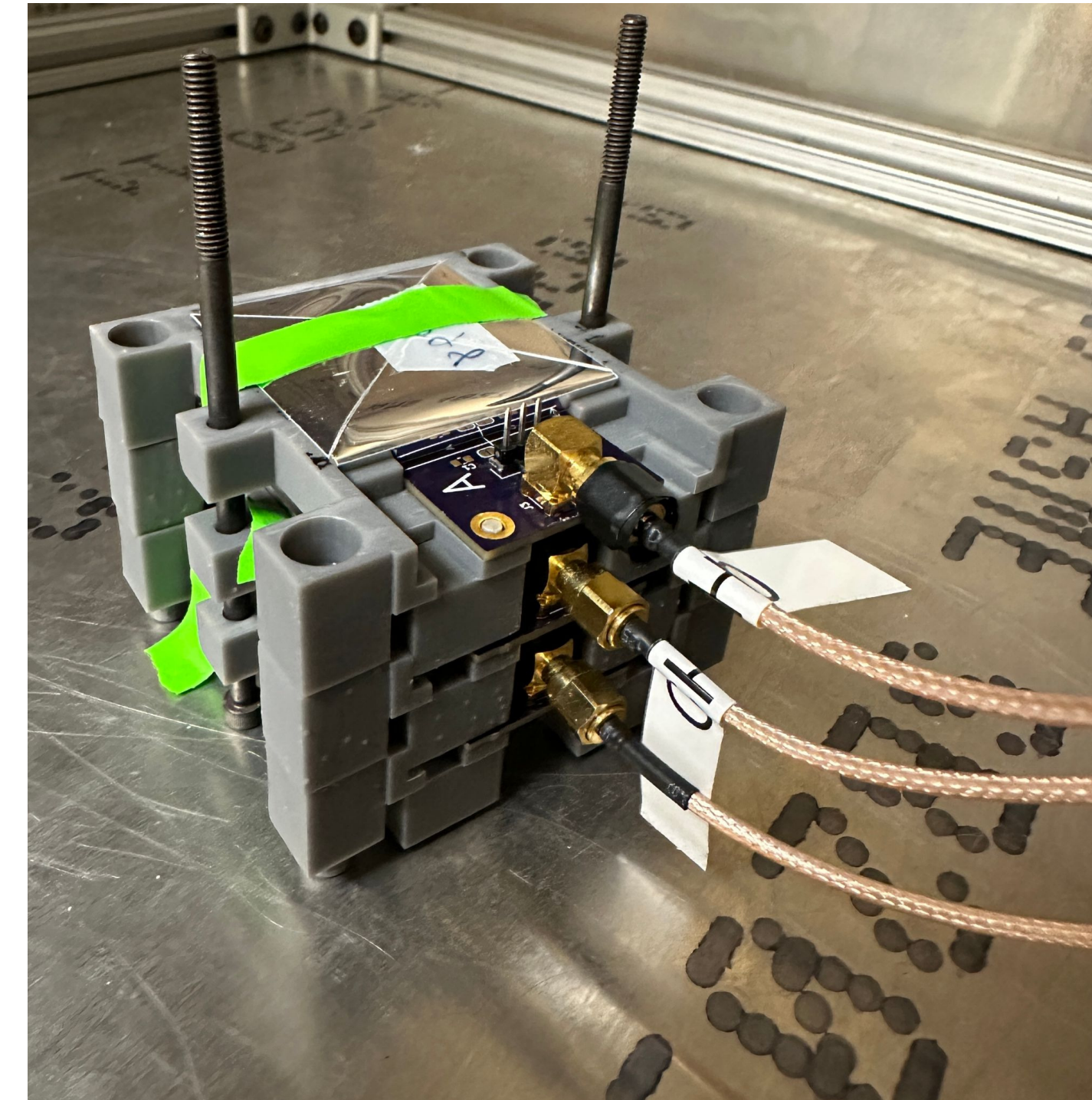
Gain of Middle SiPM = ~ 70 @7 over voltage

Tiles Information:

Selected 5 tiles of each type with large dimple

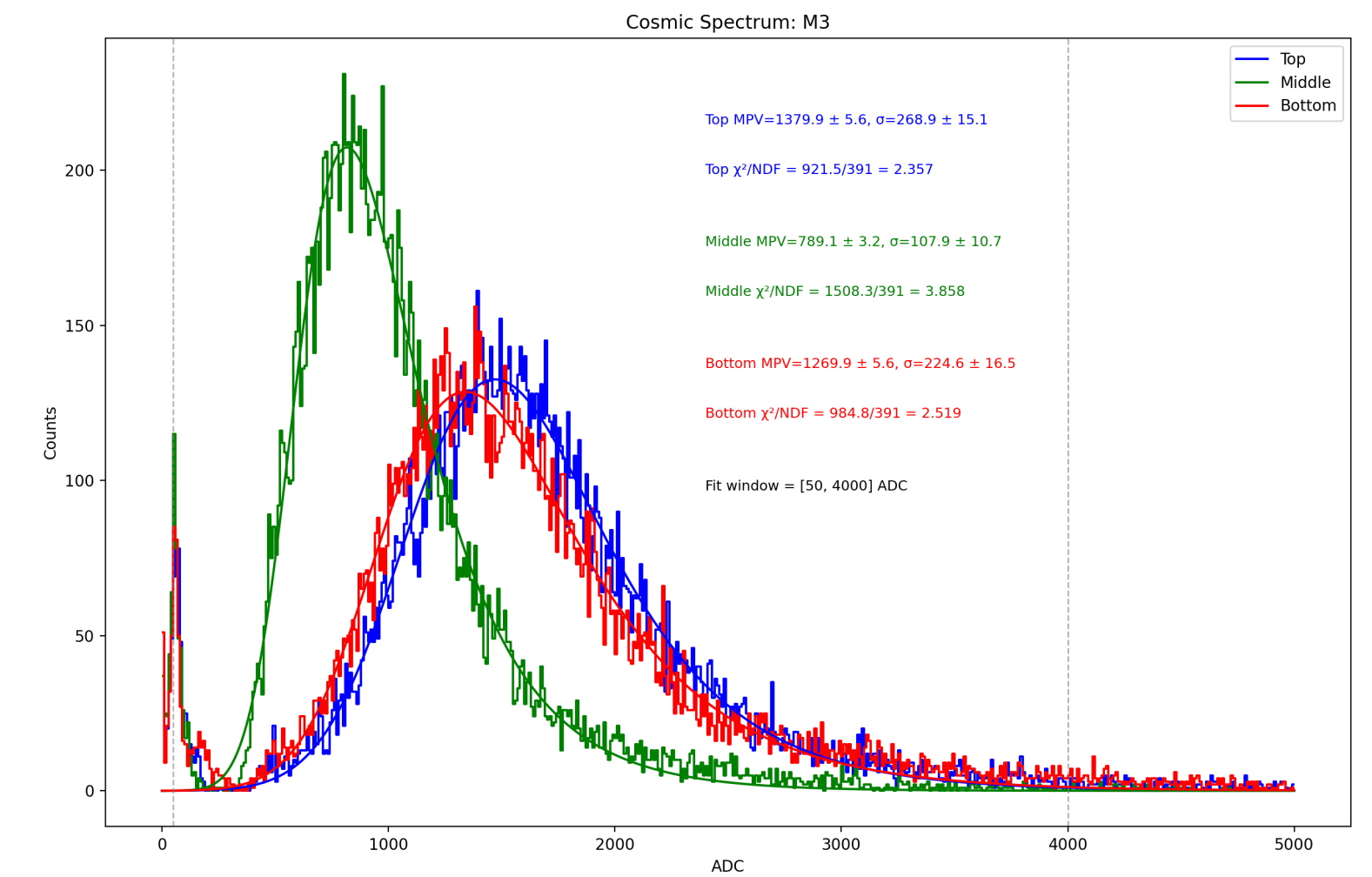
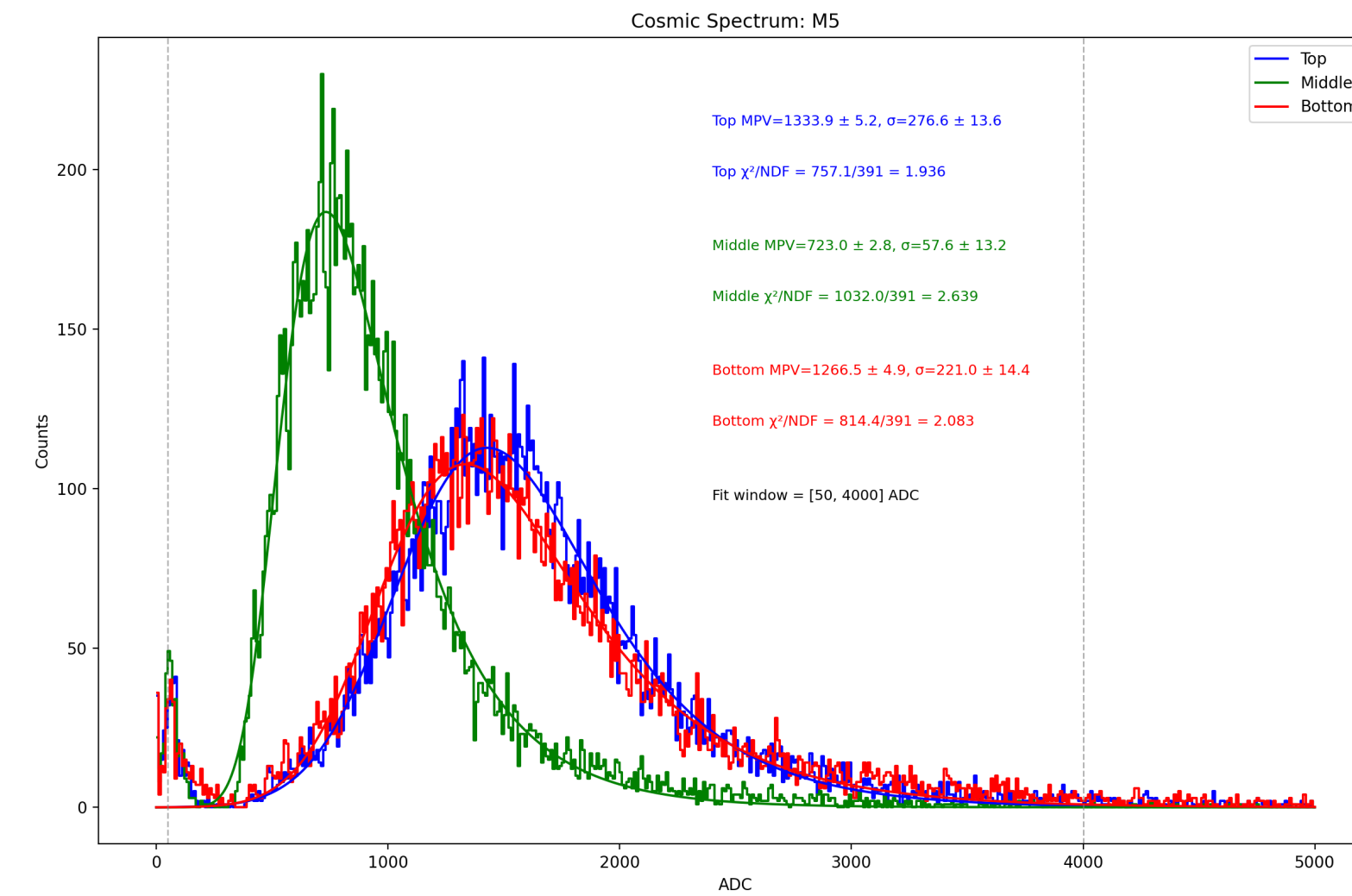
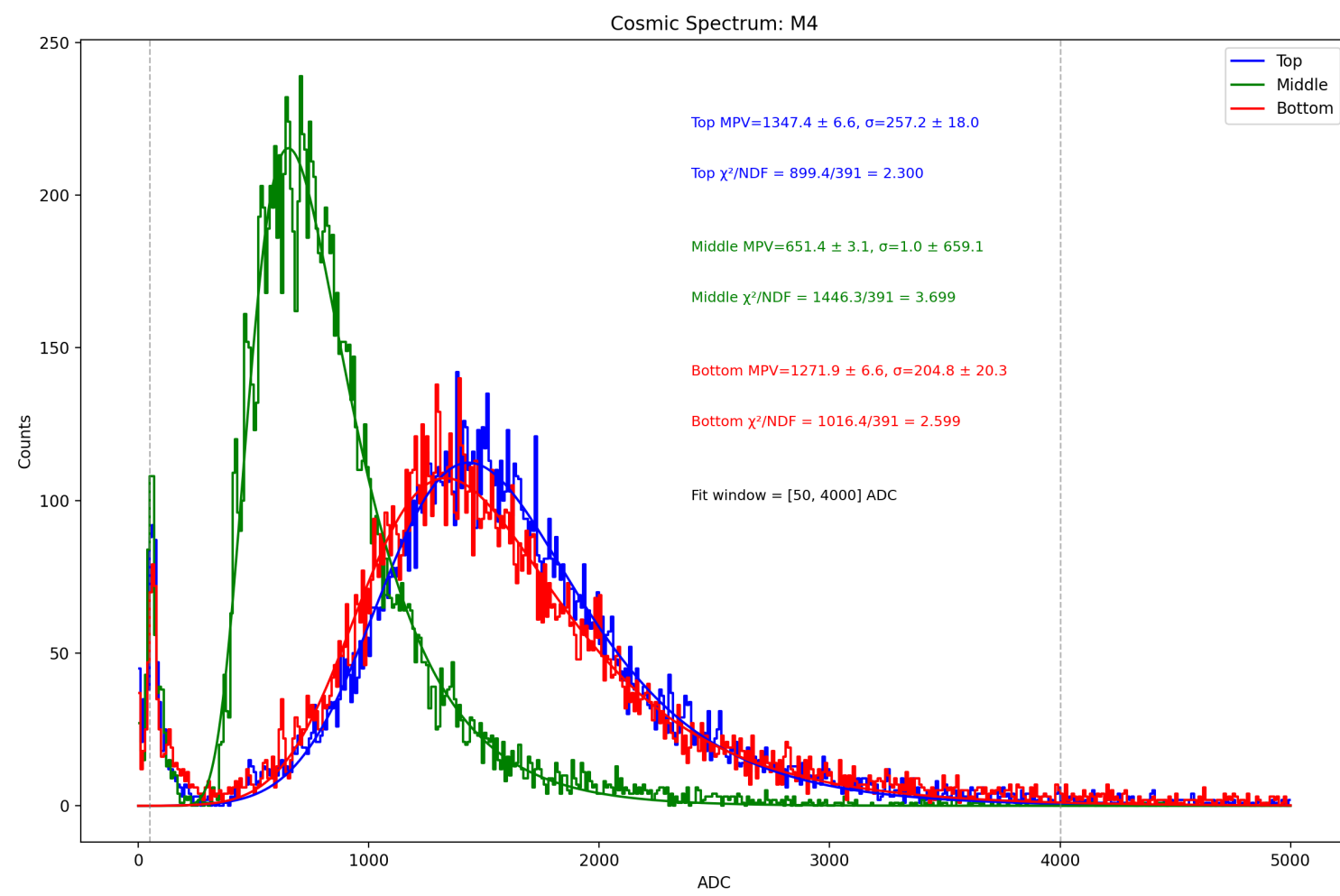
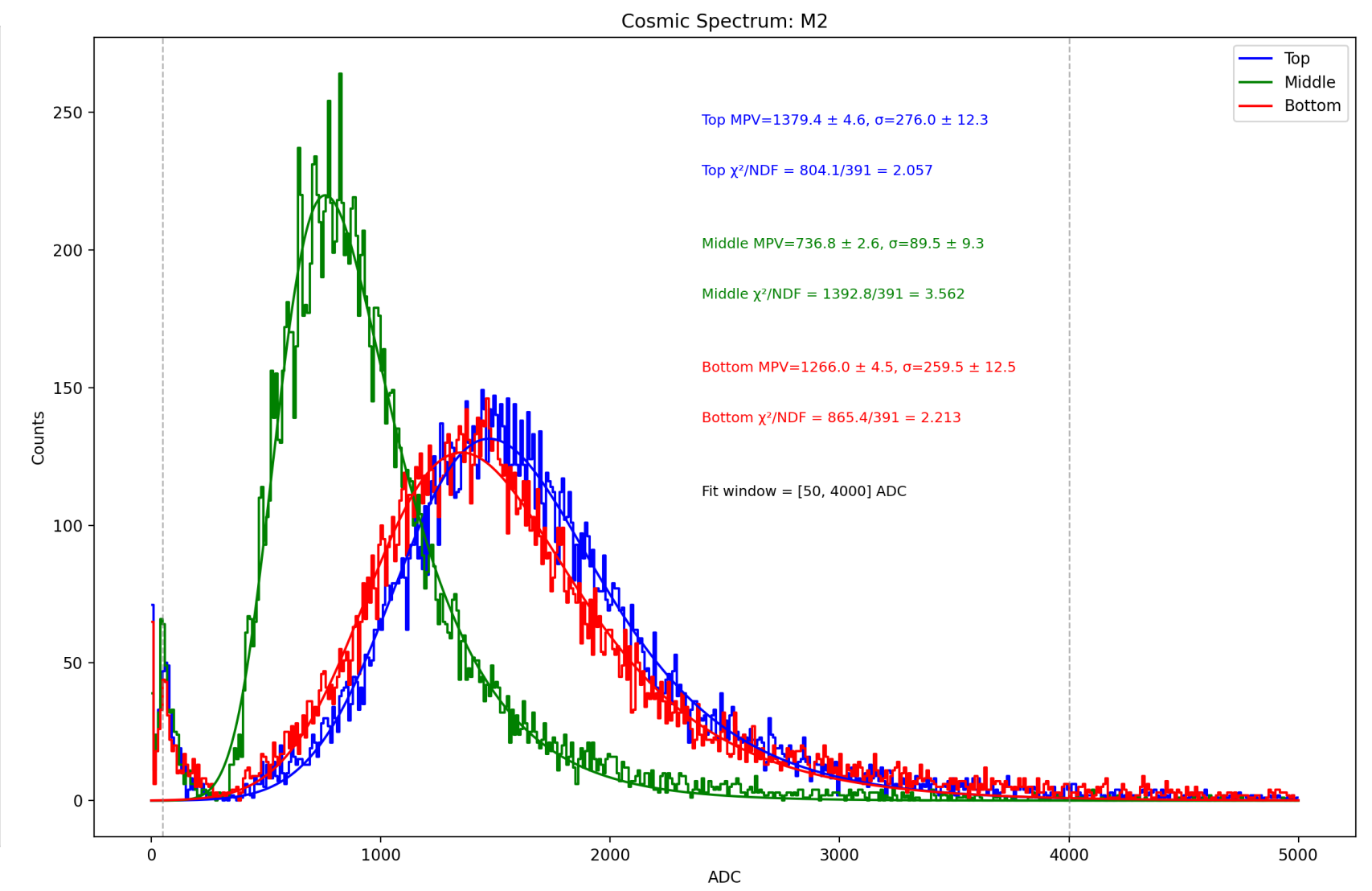
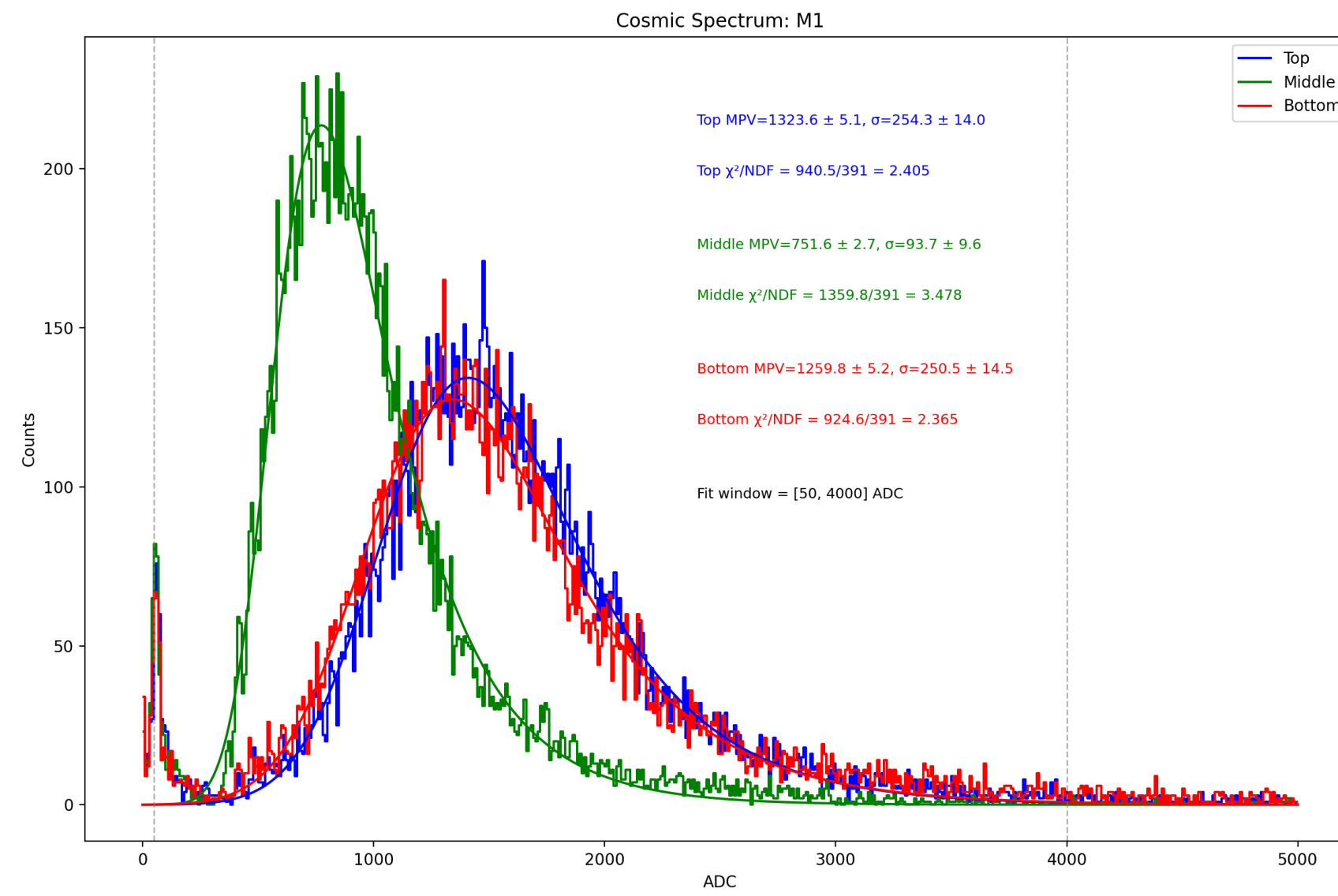
Moulded tile thickness = 4 mm

Machined tile thickness = 3.9 mm

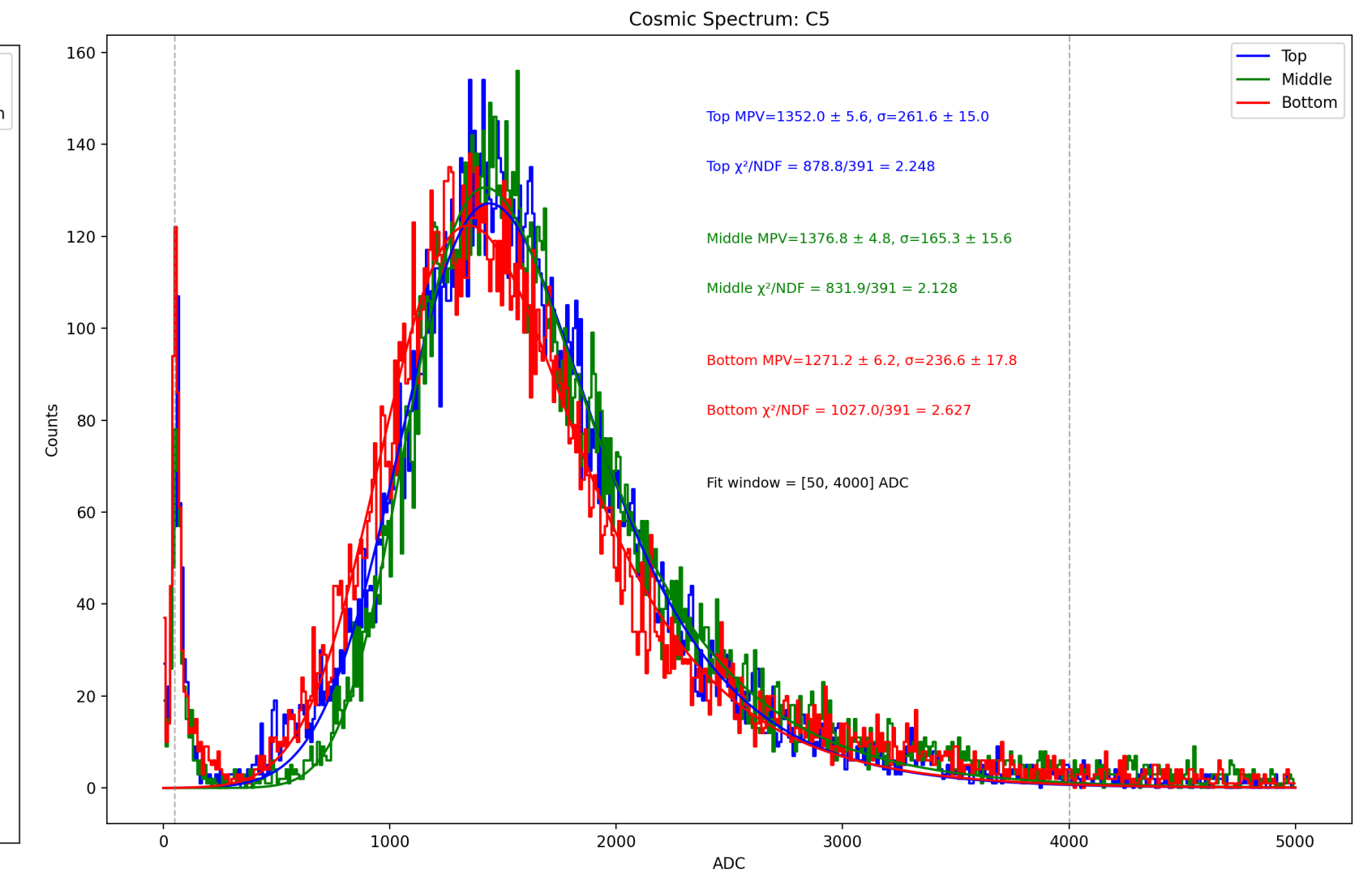
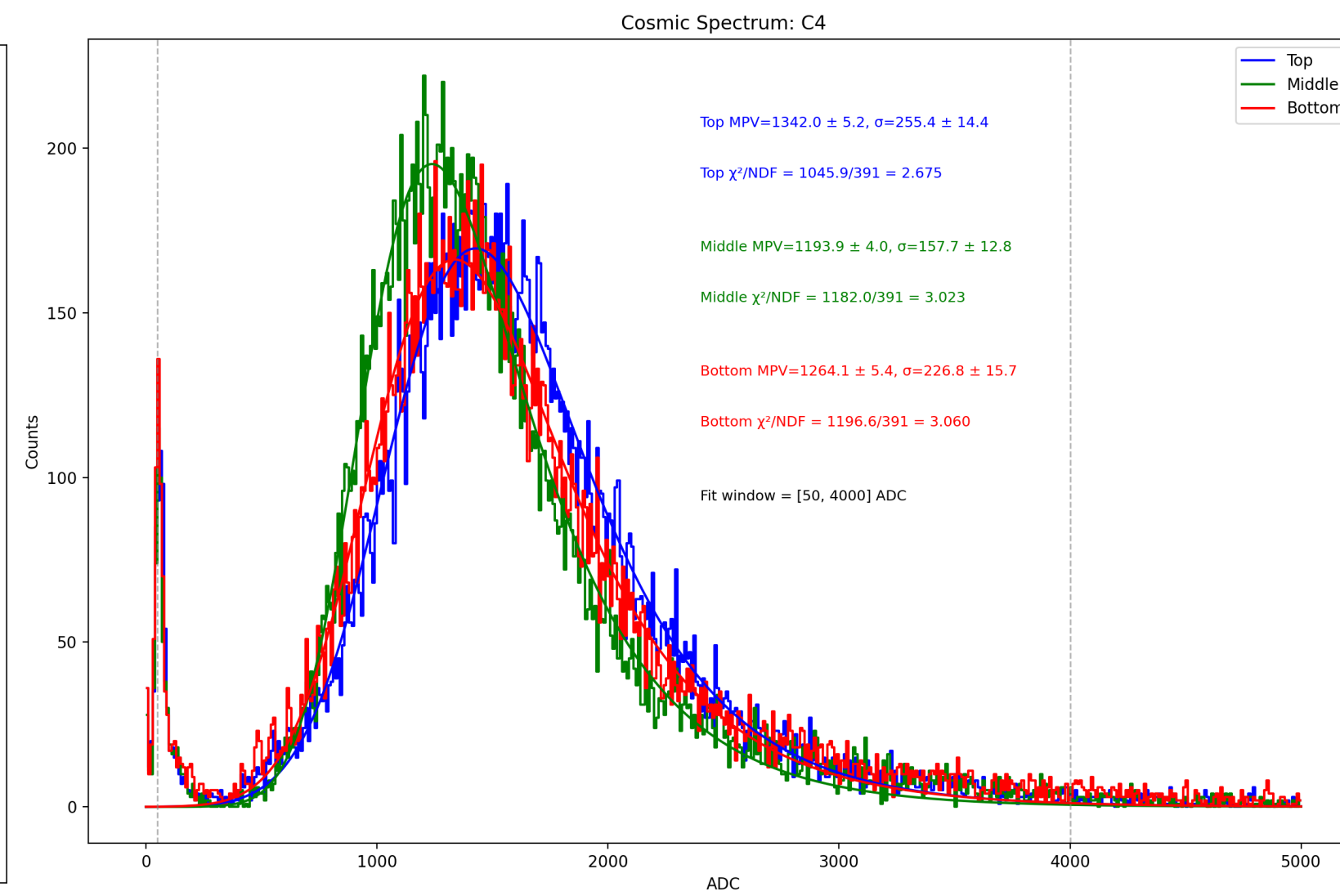
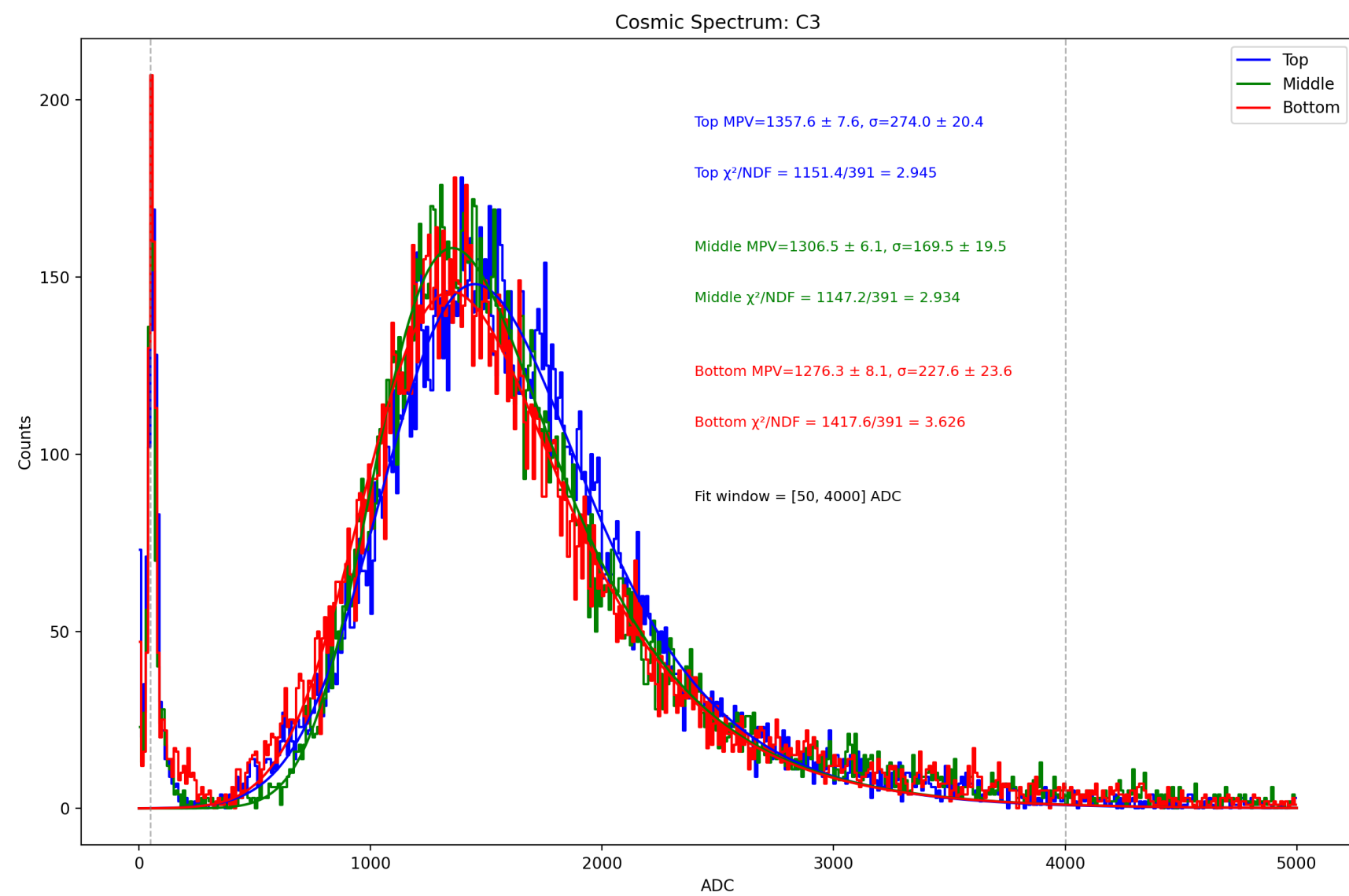
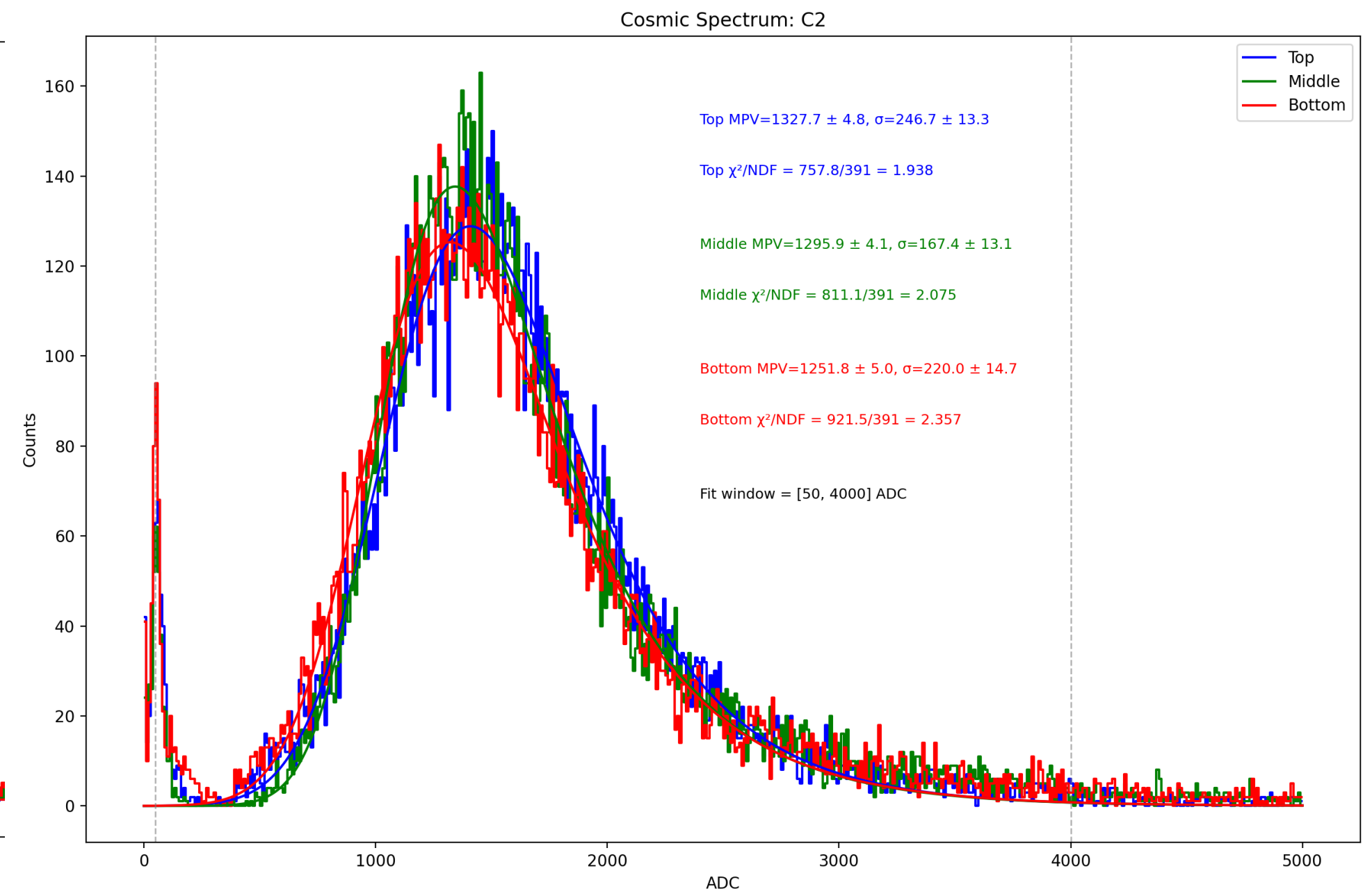
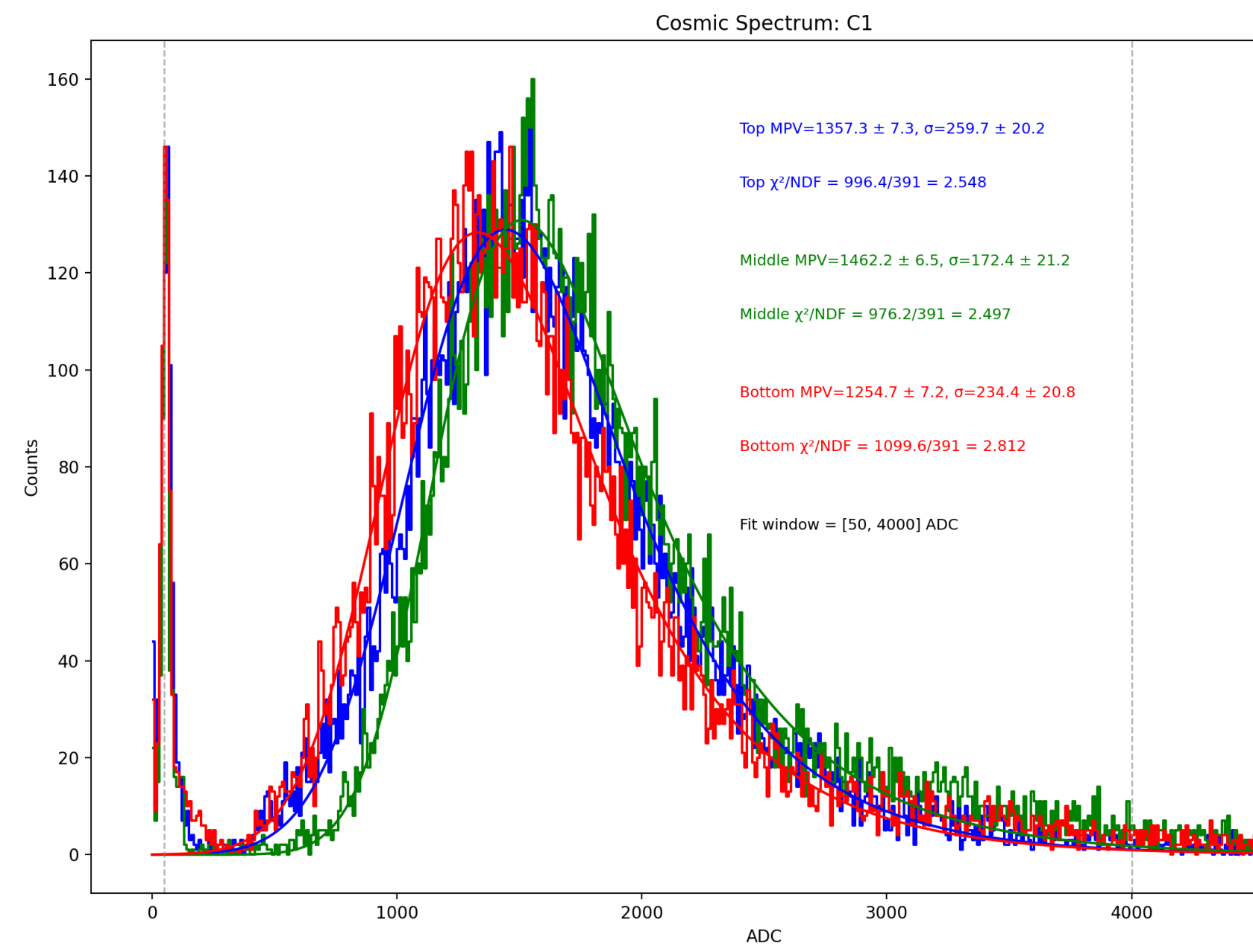


Caveat: Machined ones are 12 mm and moulded ones are 13 mm

Raw ADC Distributions for MIP at Vop for all Moulded Tiles

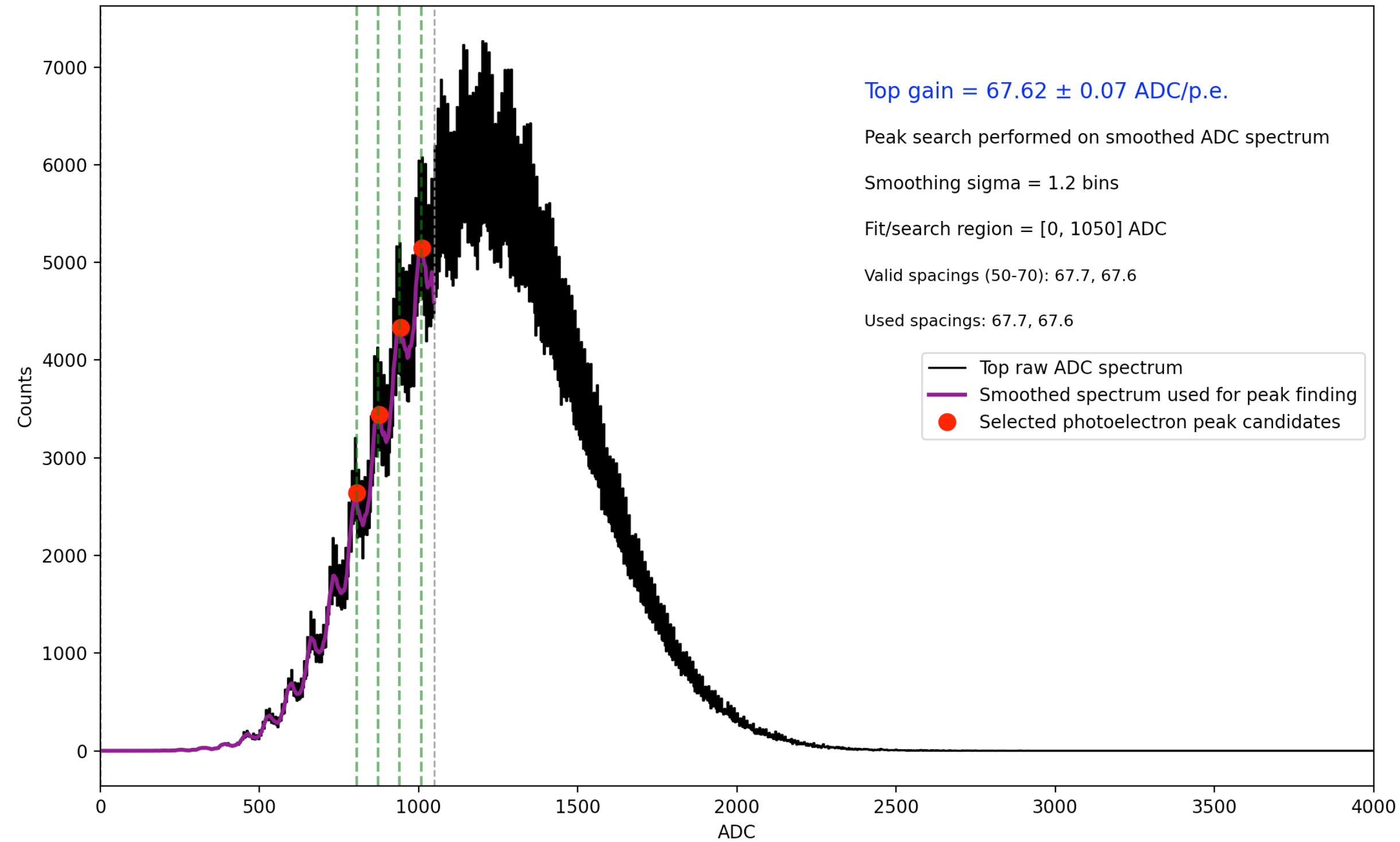


Raw ADC Distributions for MIP at Vop for all Machined Tiles

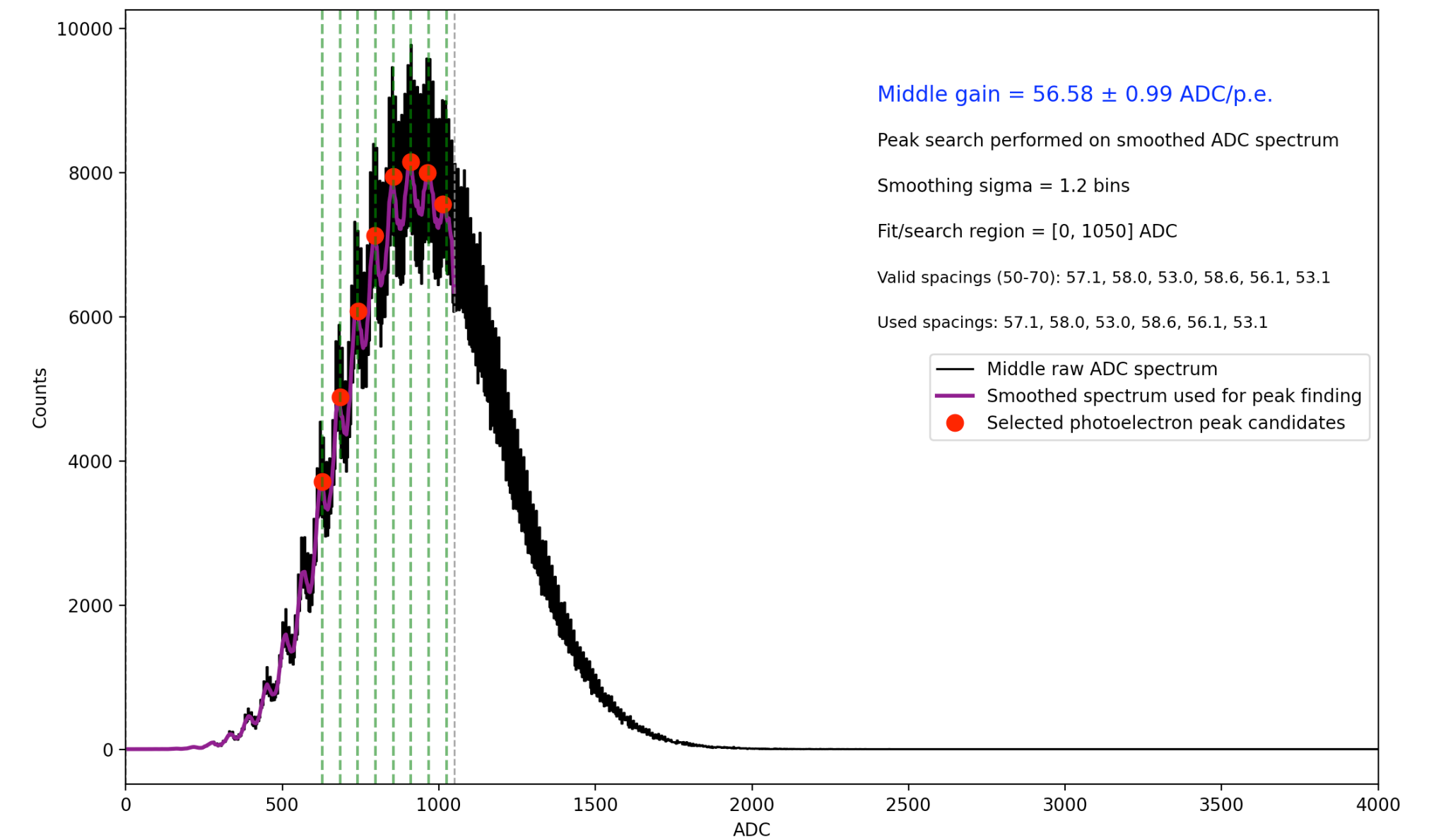


Single Photon Spectrum for gain estimation at Vop

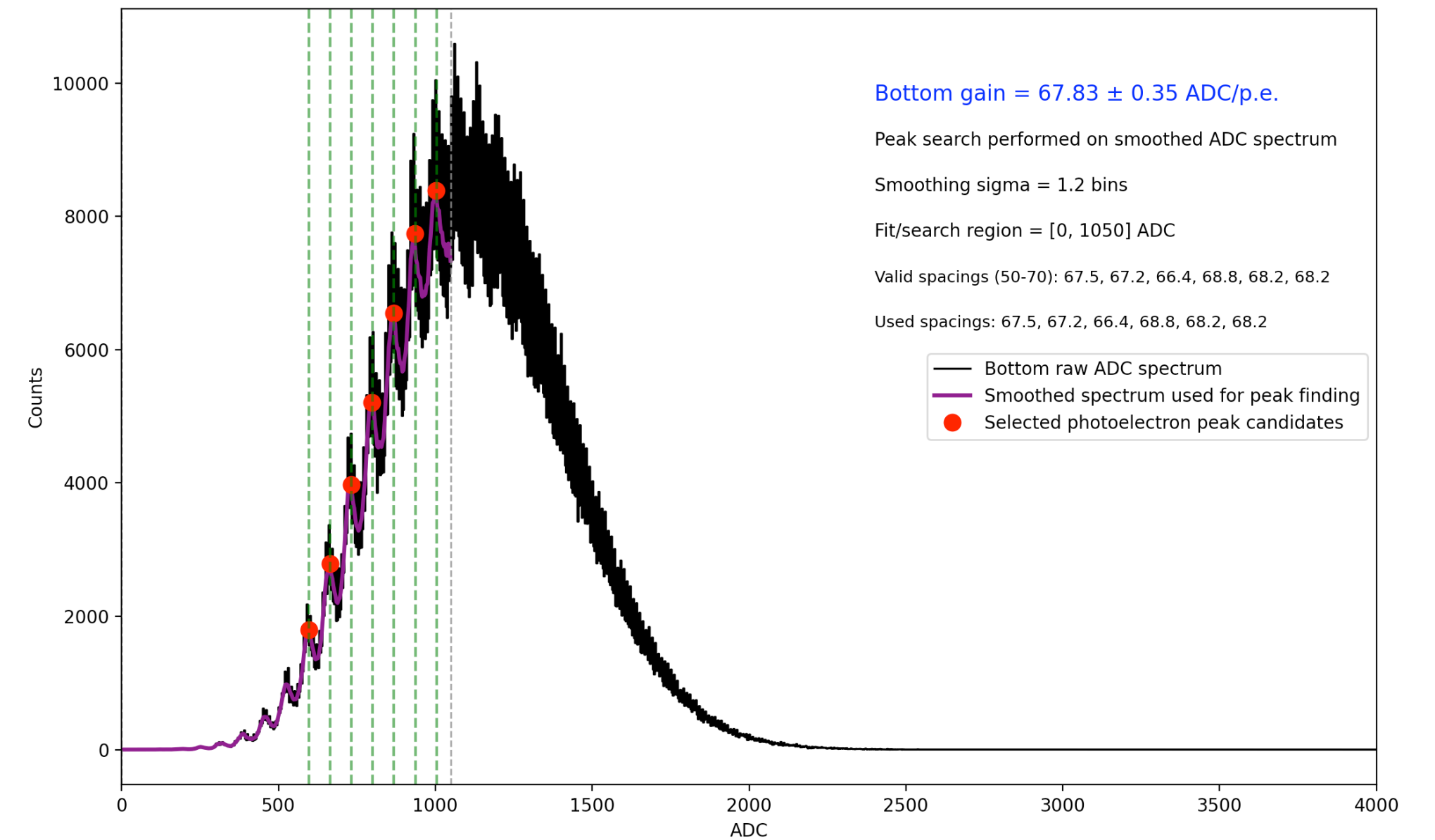
Gain Calibration: Top



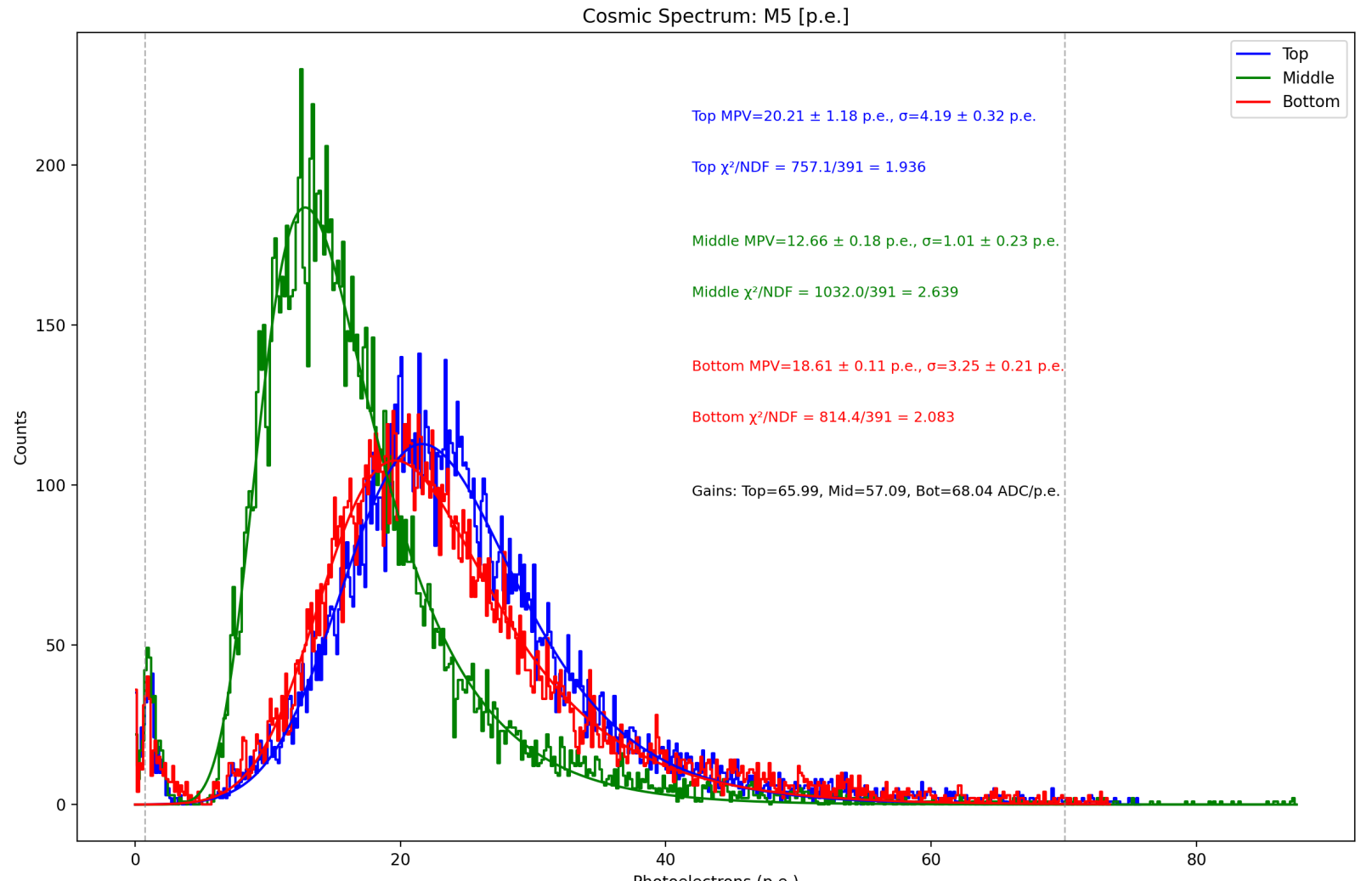
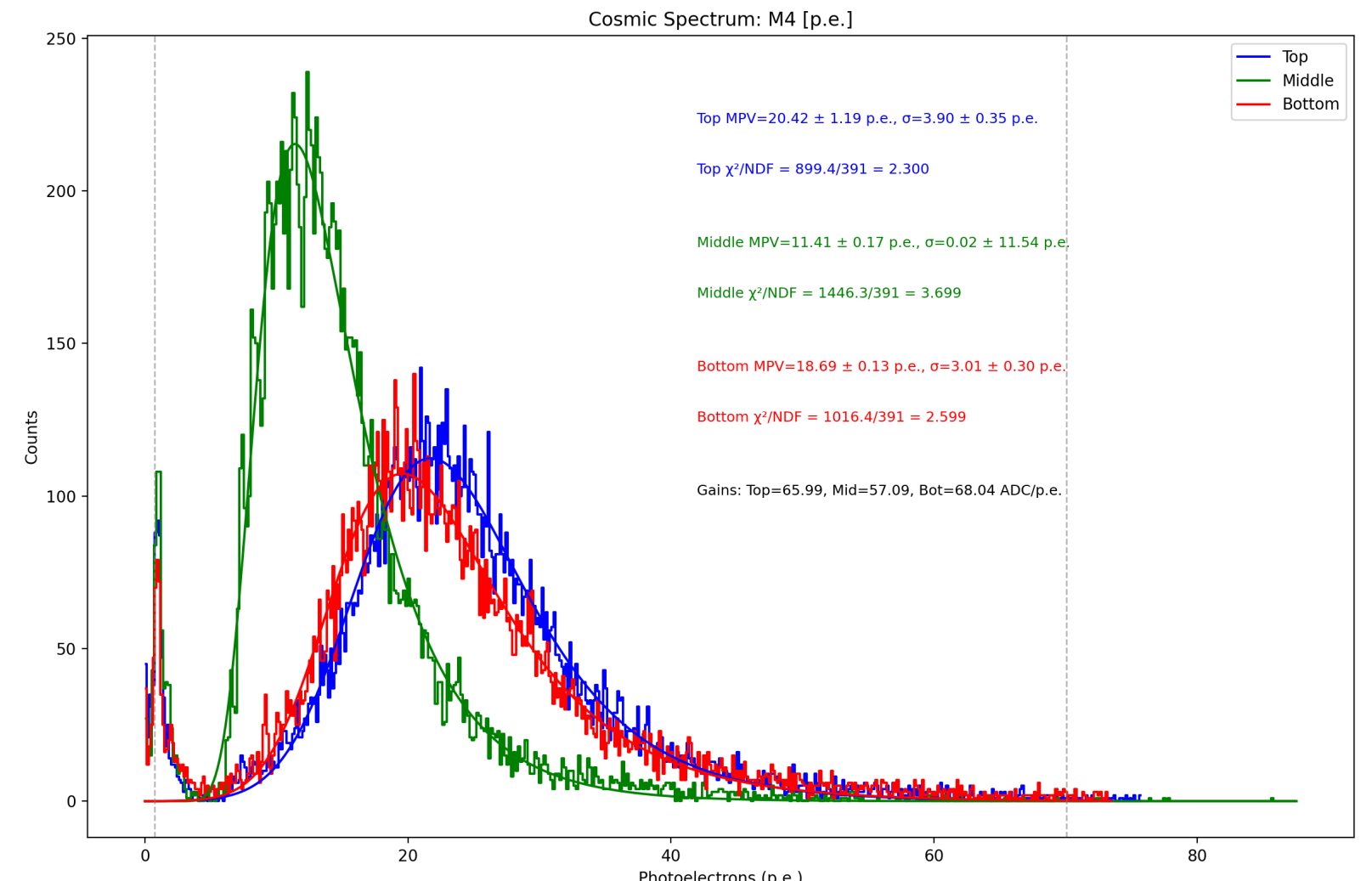
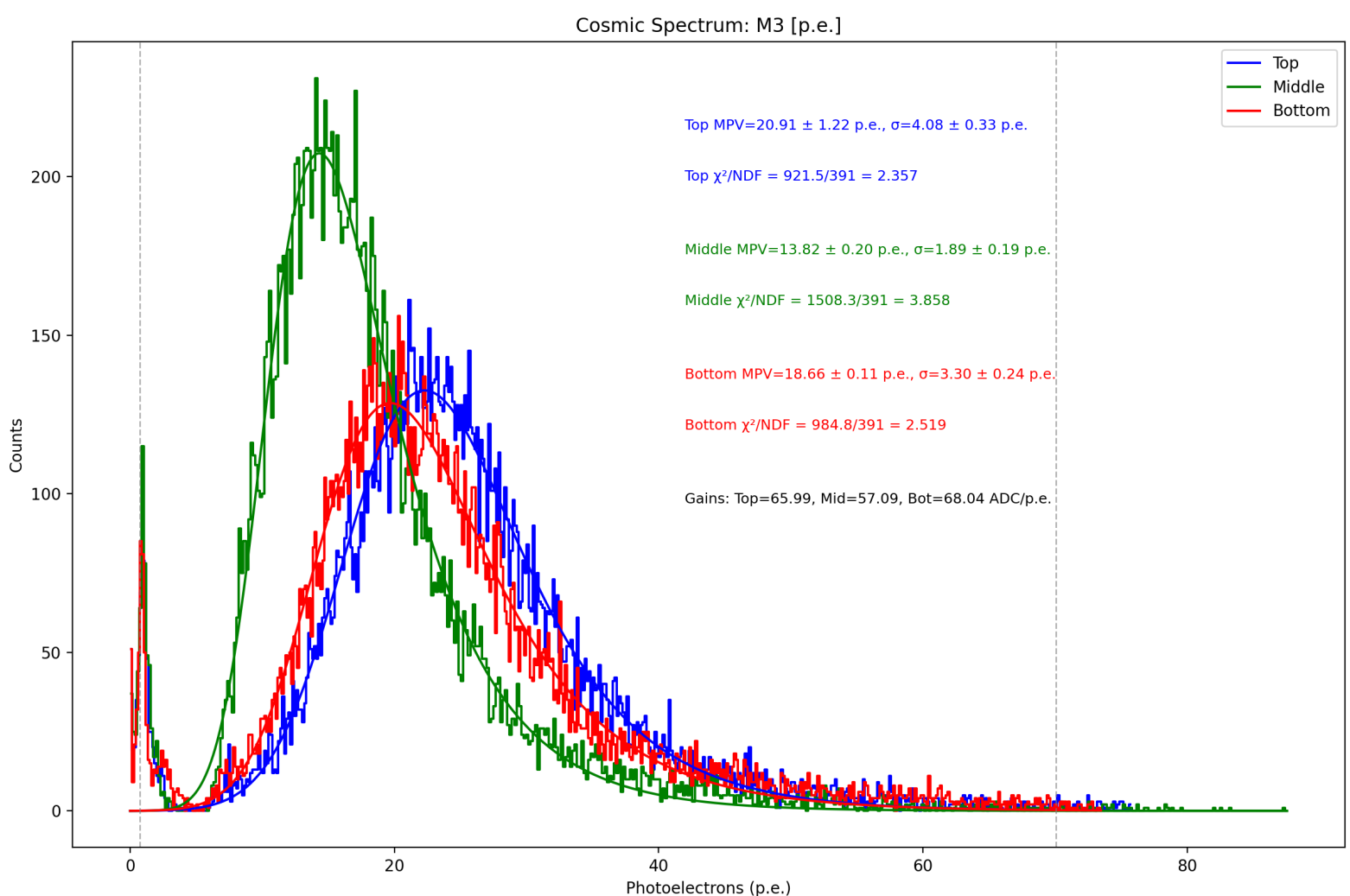
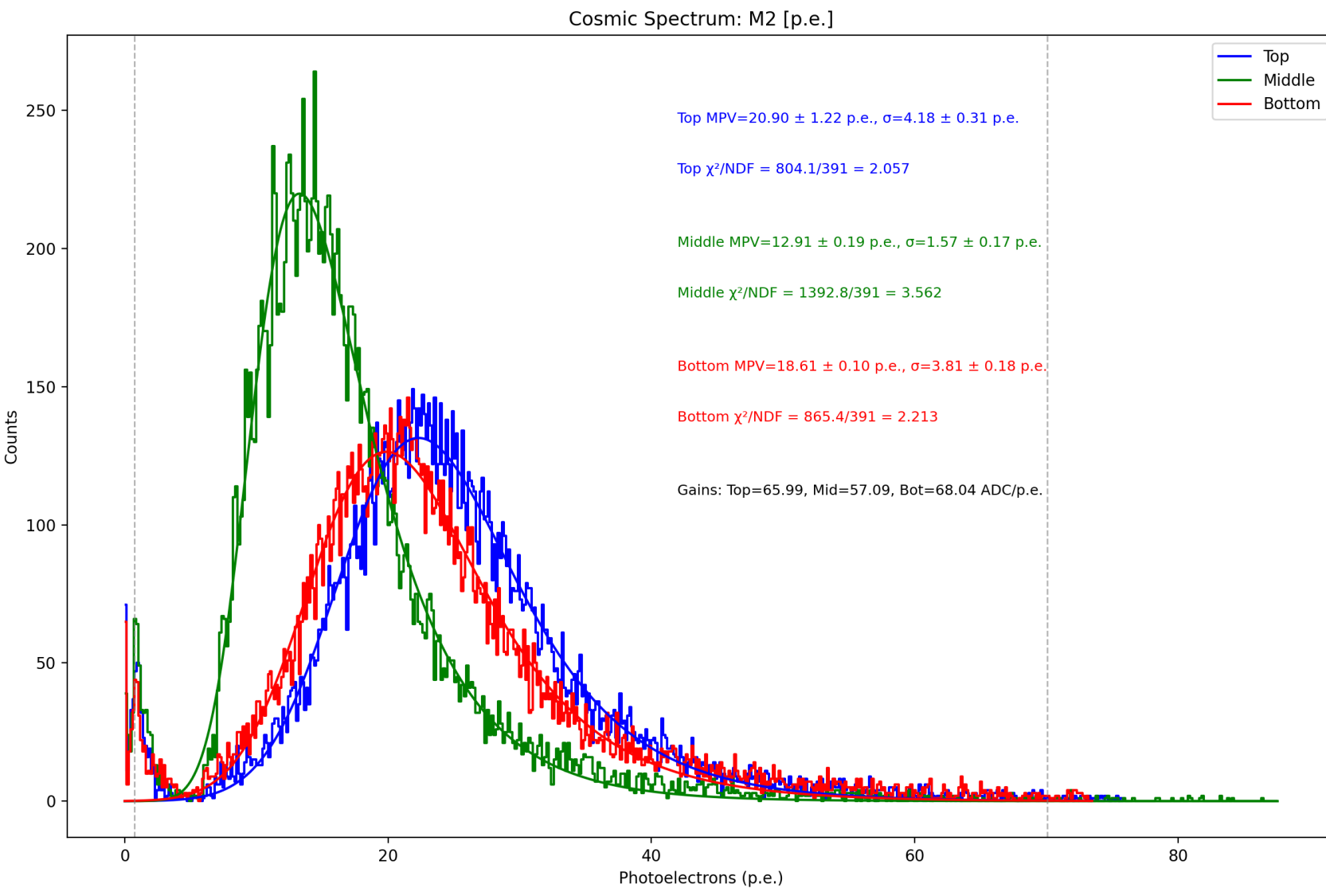
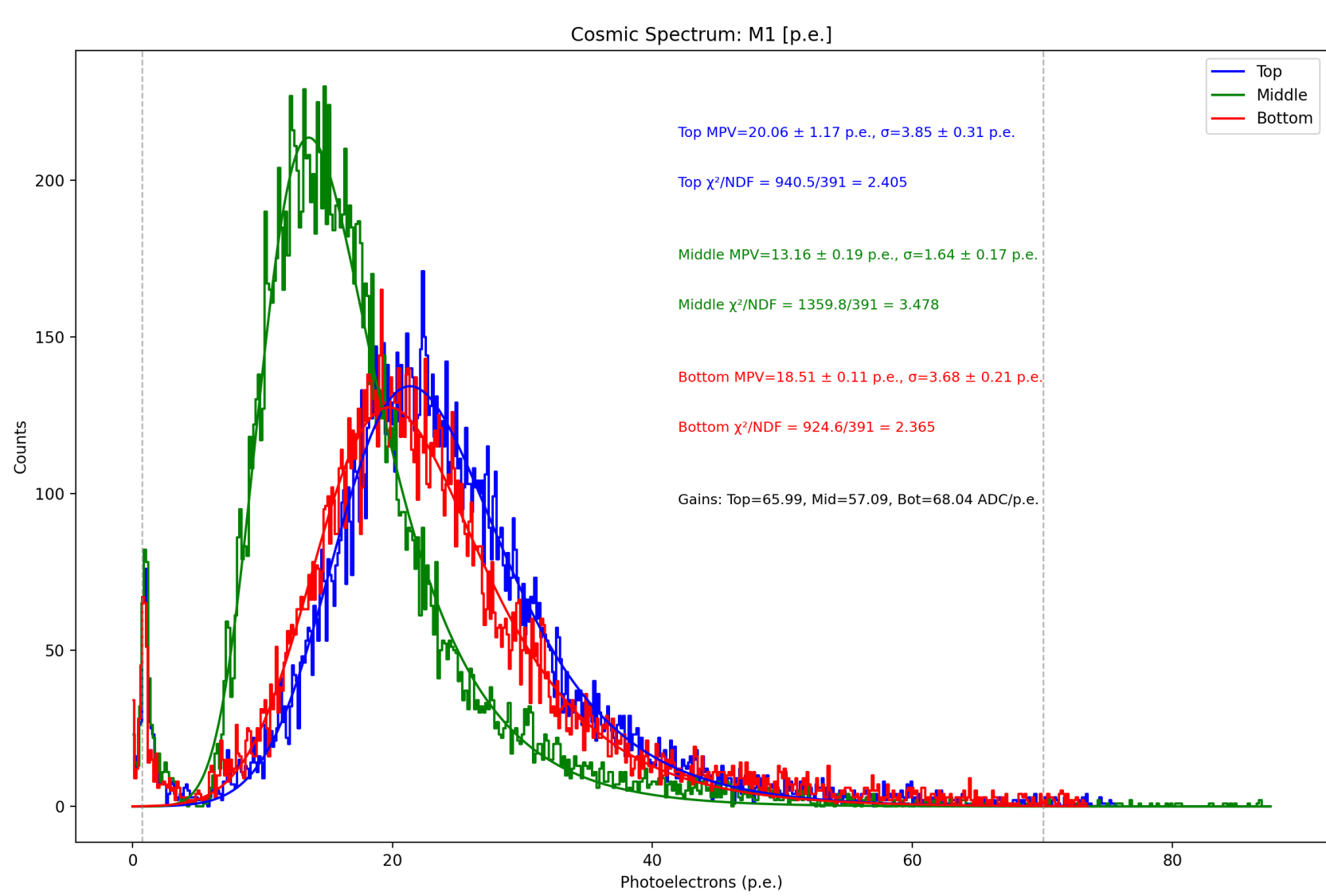
Gain Calibration: Middle



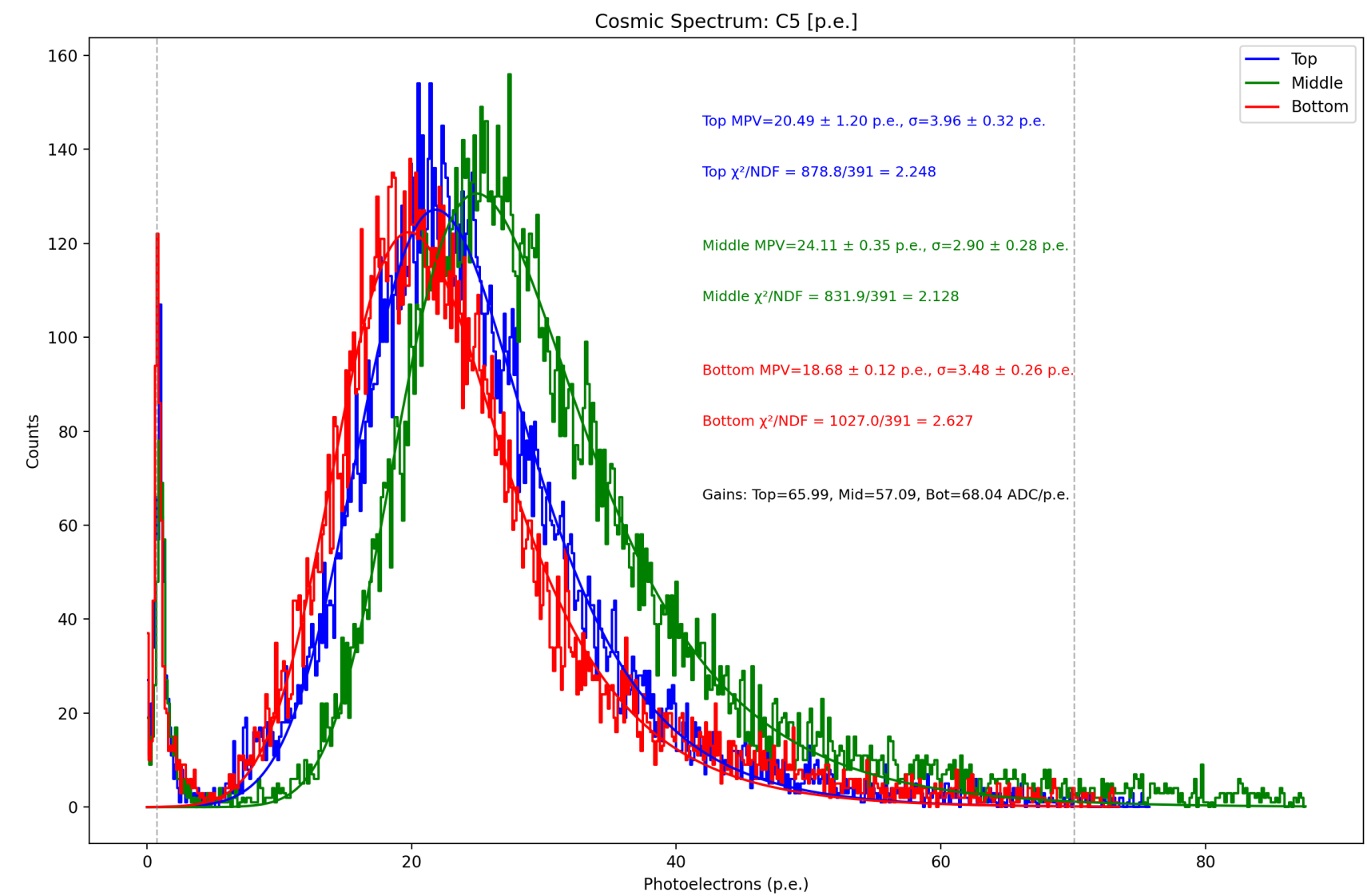
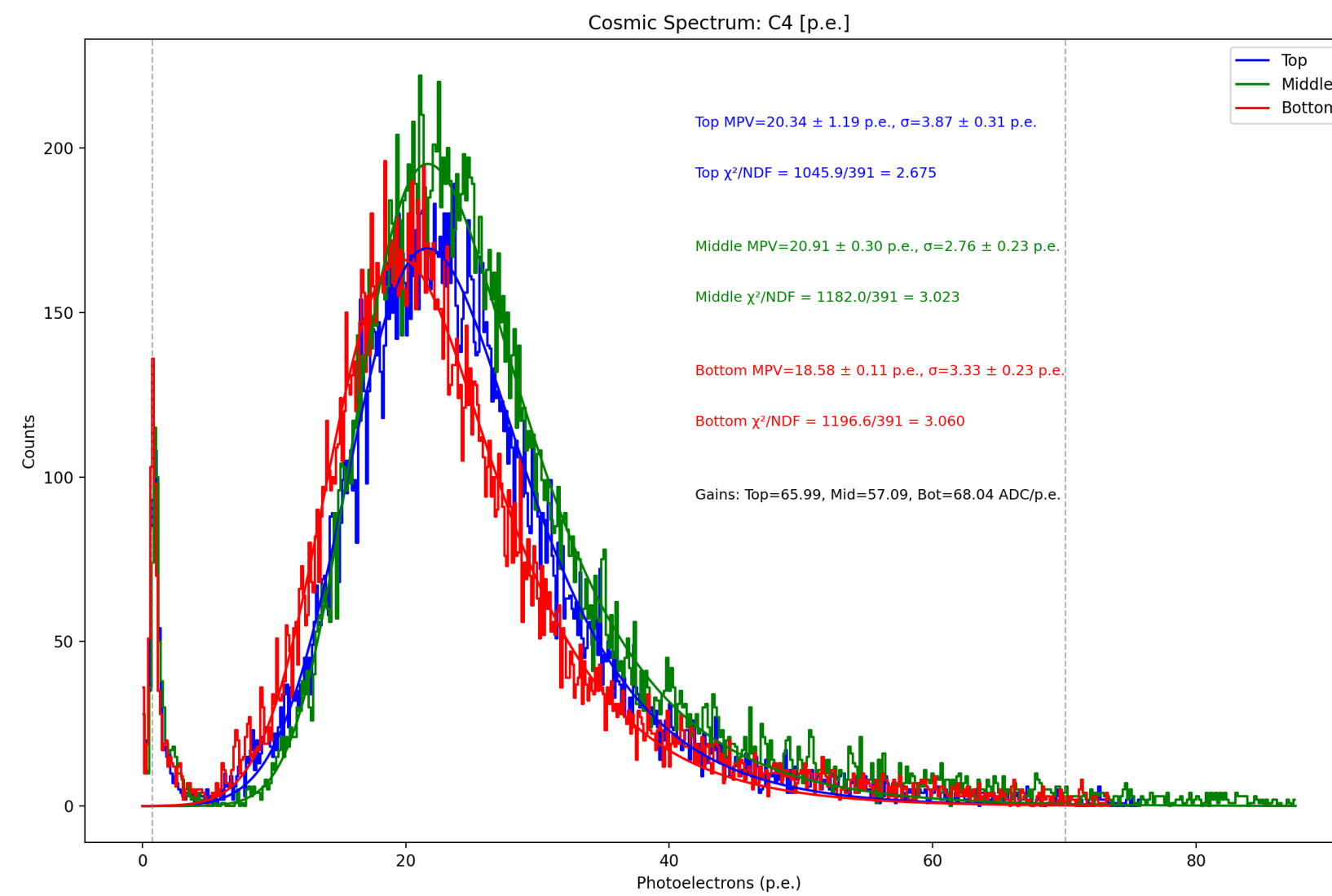
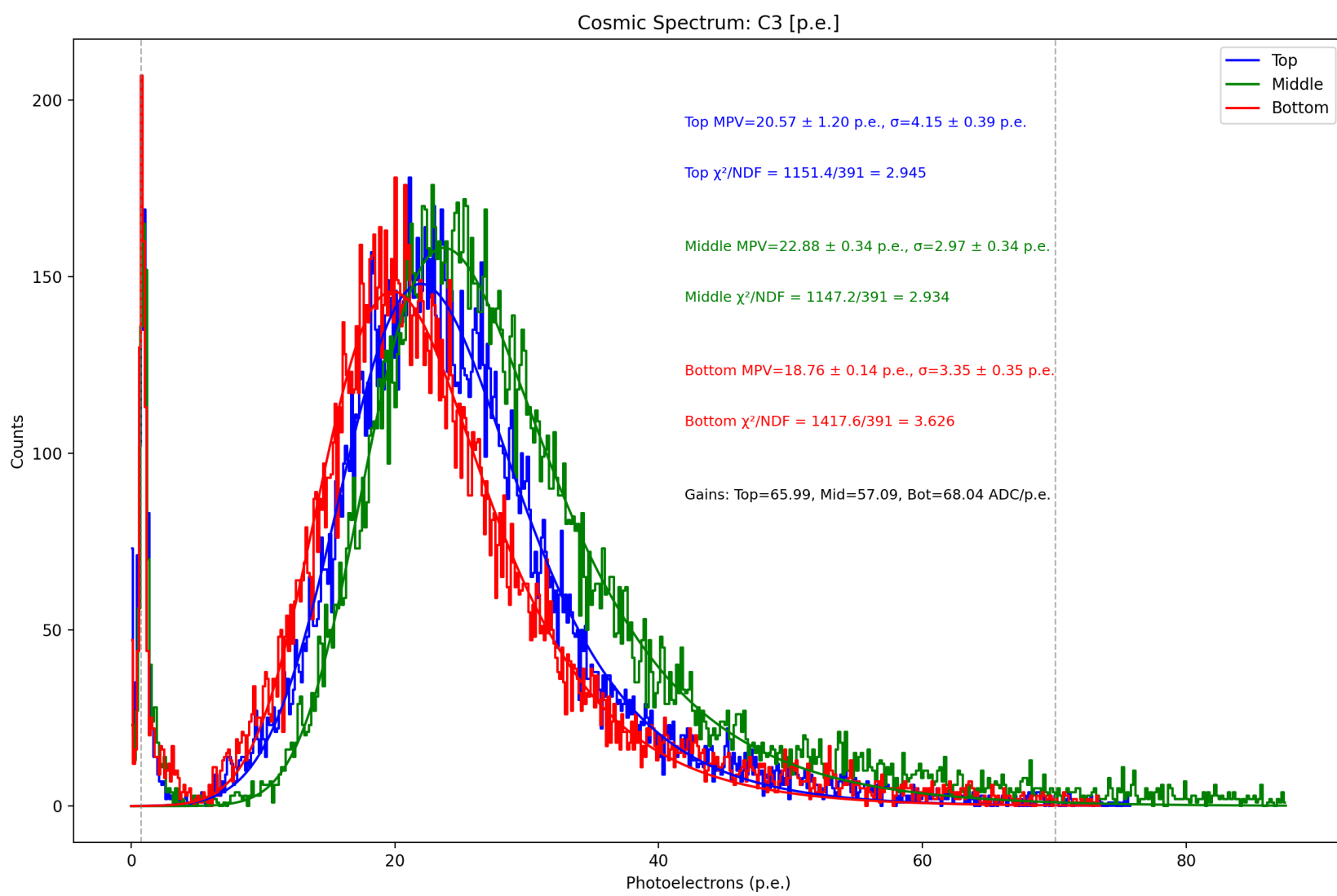
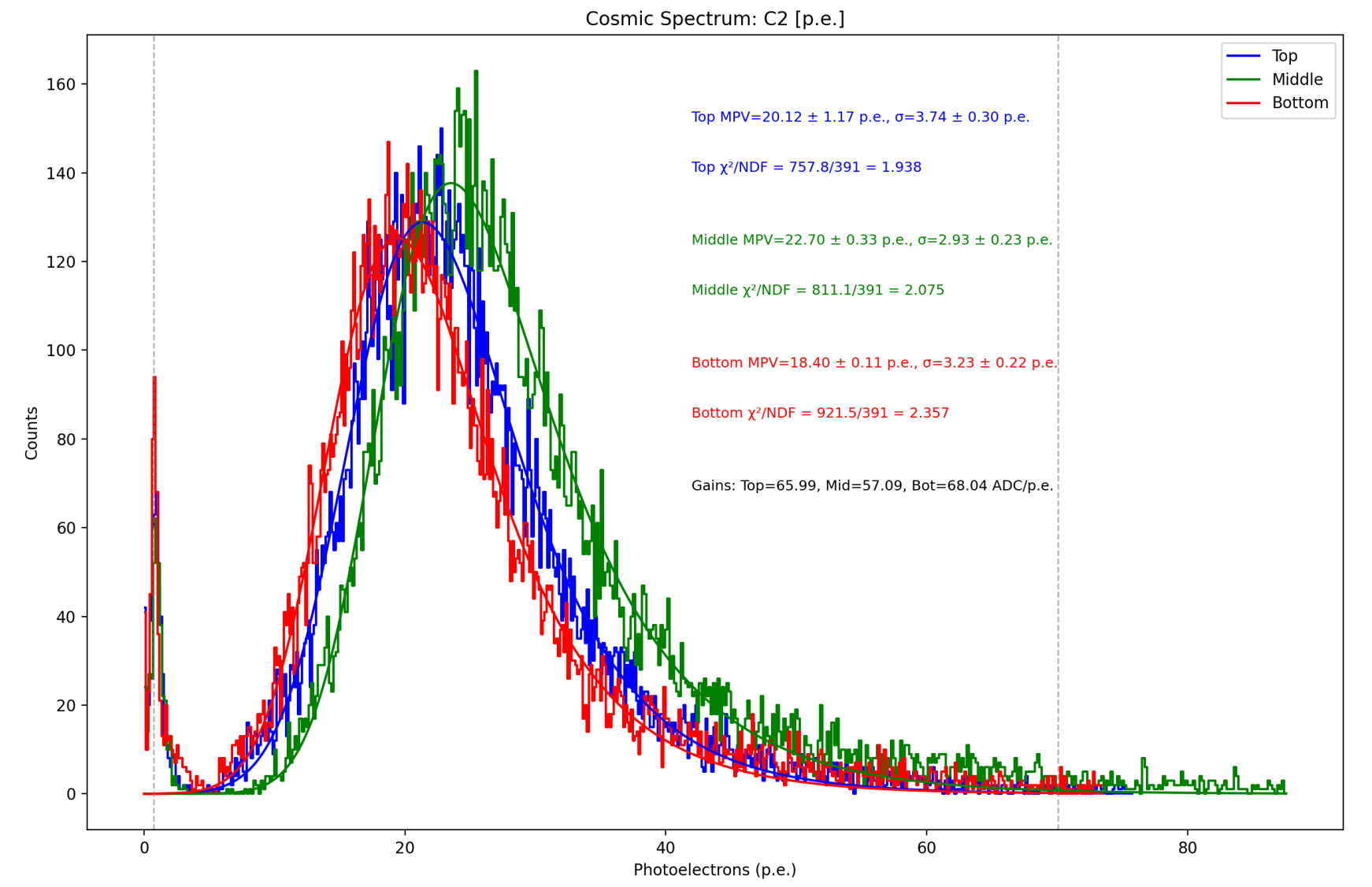
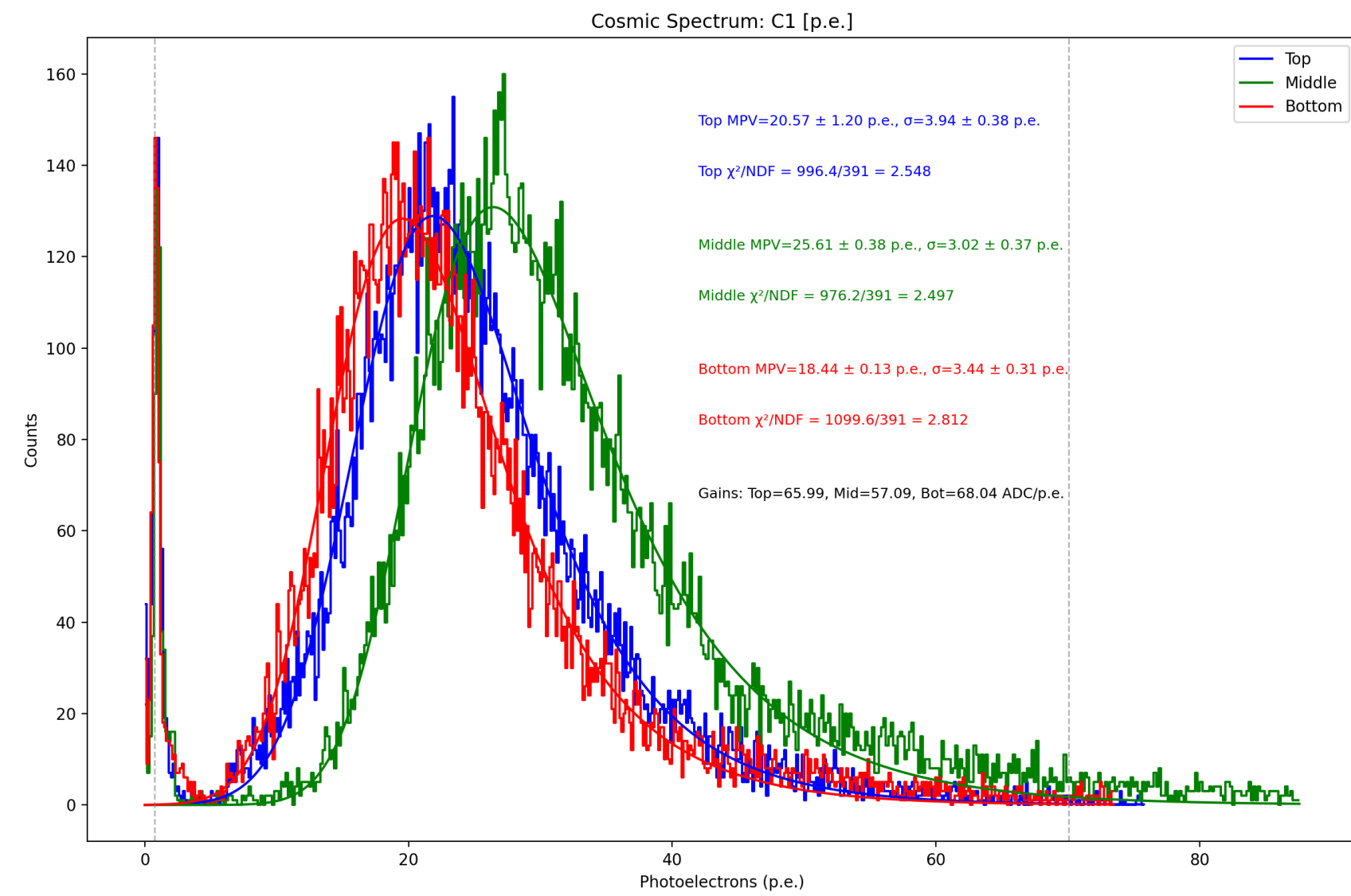
Gain Calibration: Bottom



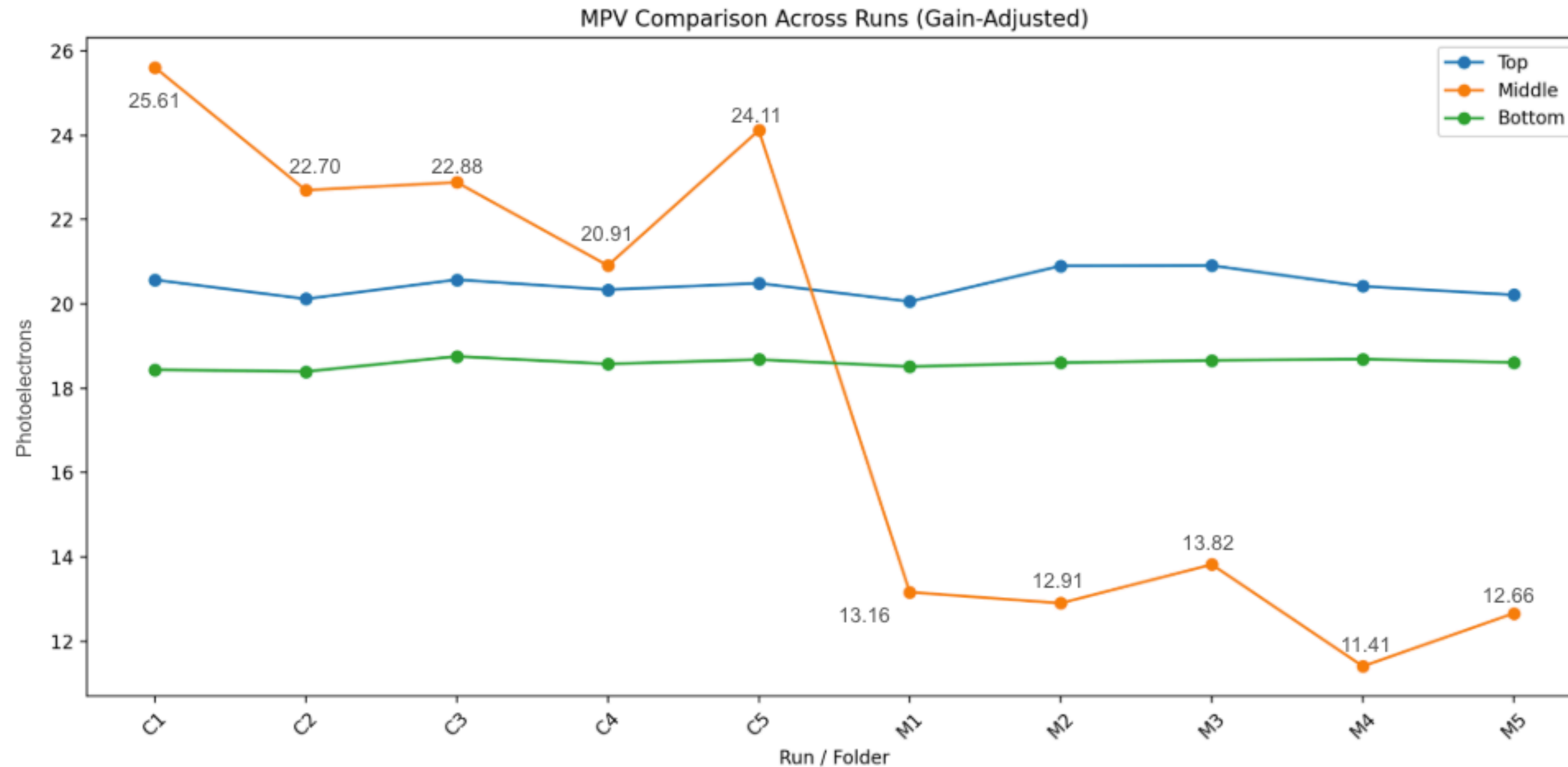
PE converted MIP distributions for all Moulded Tiles



PE converted MIP distributions for all Machined Tiles



MPVs of 5 Machined and 5 Moulded Tiles



Tile	MPV (p.e.)
C1	25.61
C2	22.70
C3	22.88
C4	20.91
C5	24.11
Cut Mean ± SD	23.24 ± 1.72
M1	13.16
M2	12.91
M3	13.82
M4	11.41
M5	12.66
Molded Mean ± SD	12.79 ± 0.88

📍 The molded tiles produced approximately 44.9% less light than the machine-cut tiles.