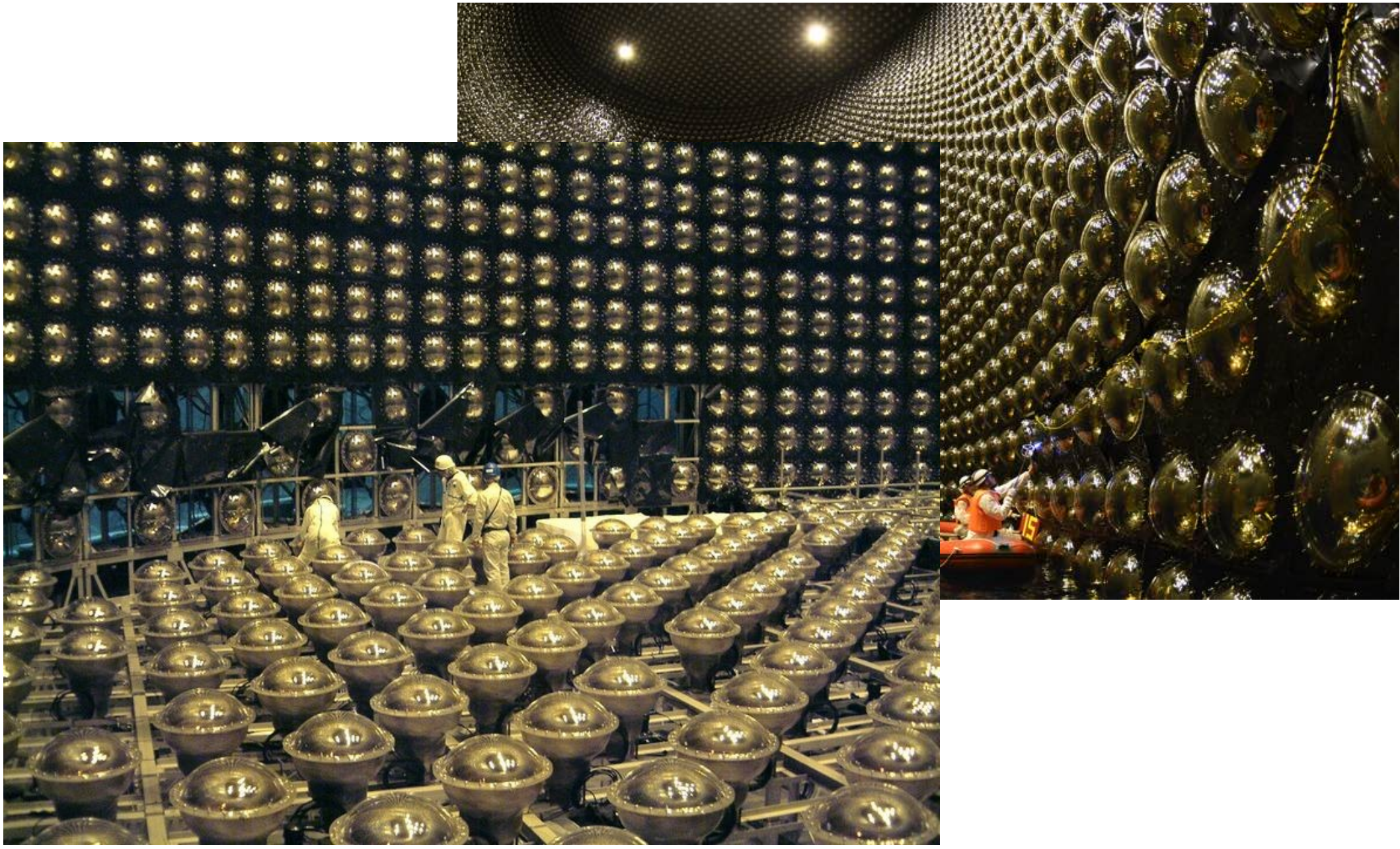
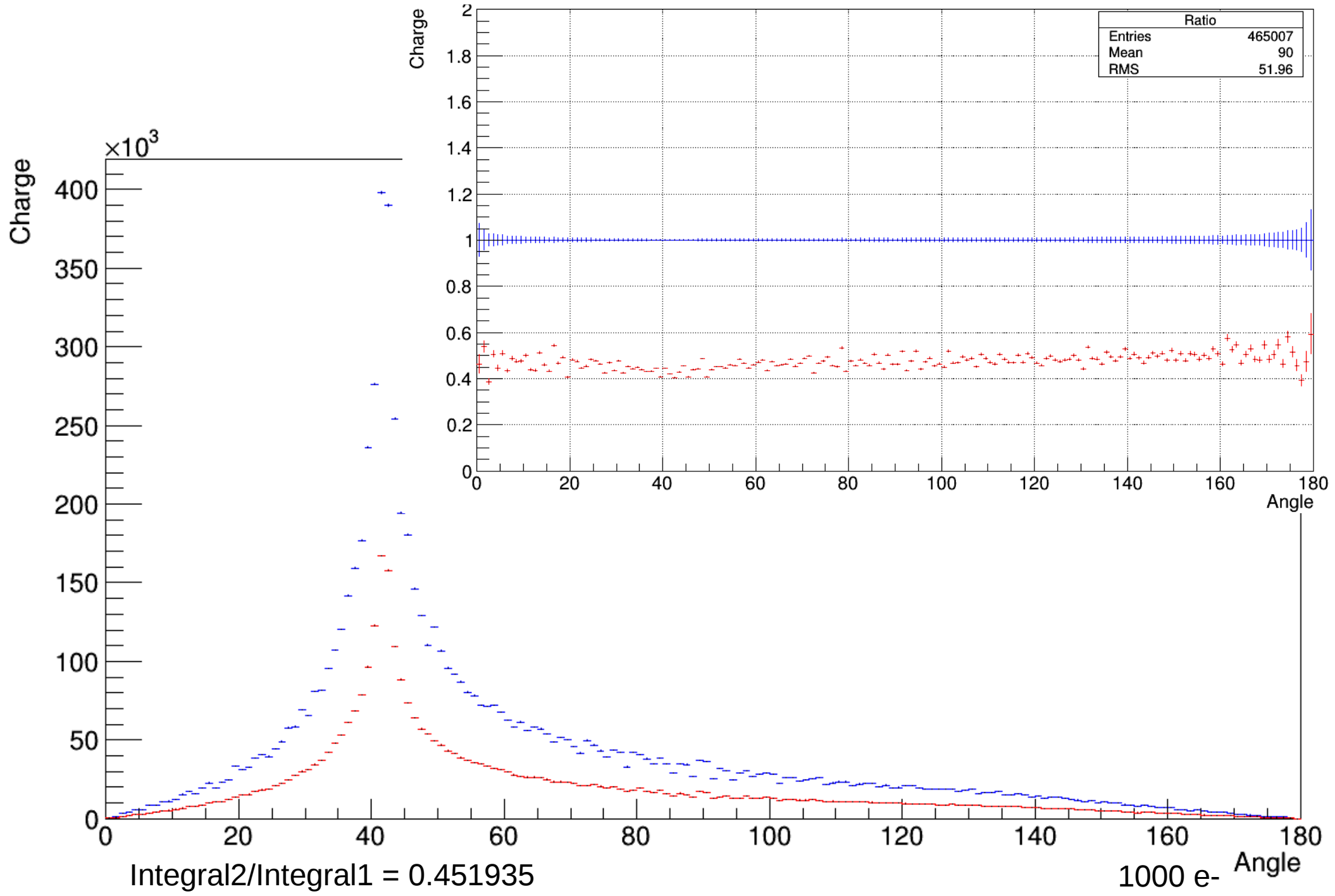
Report

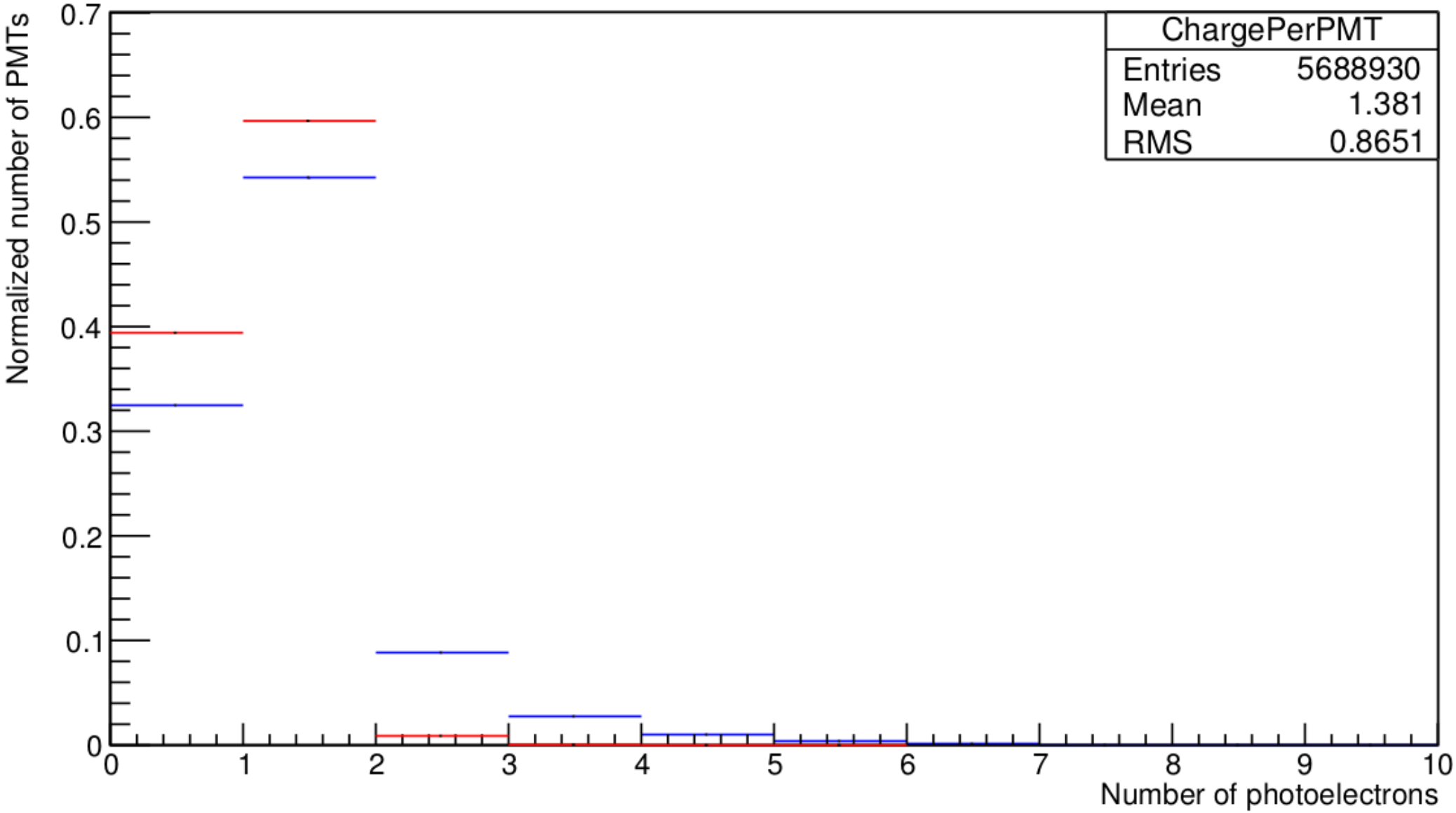
Svetlana Karpova



Charge Profile (20” PMTs, 3” mPMTs)

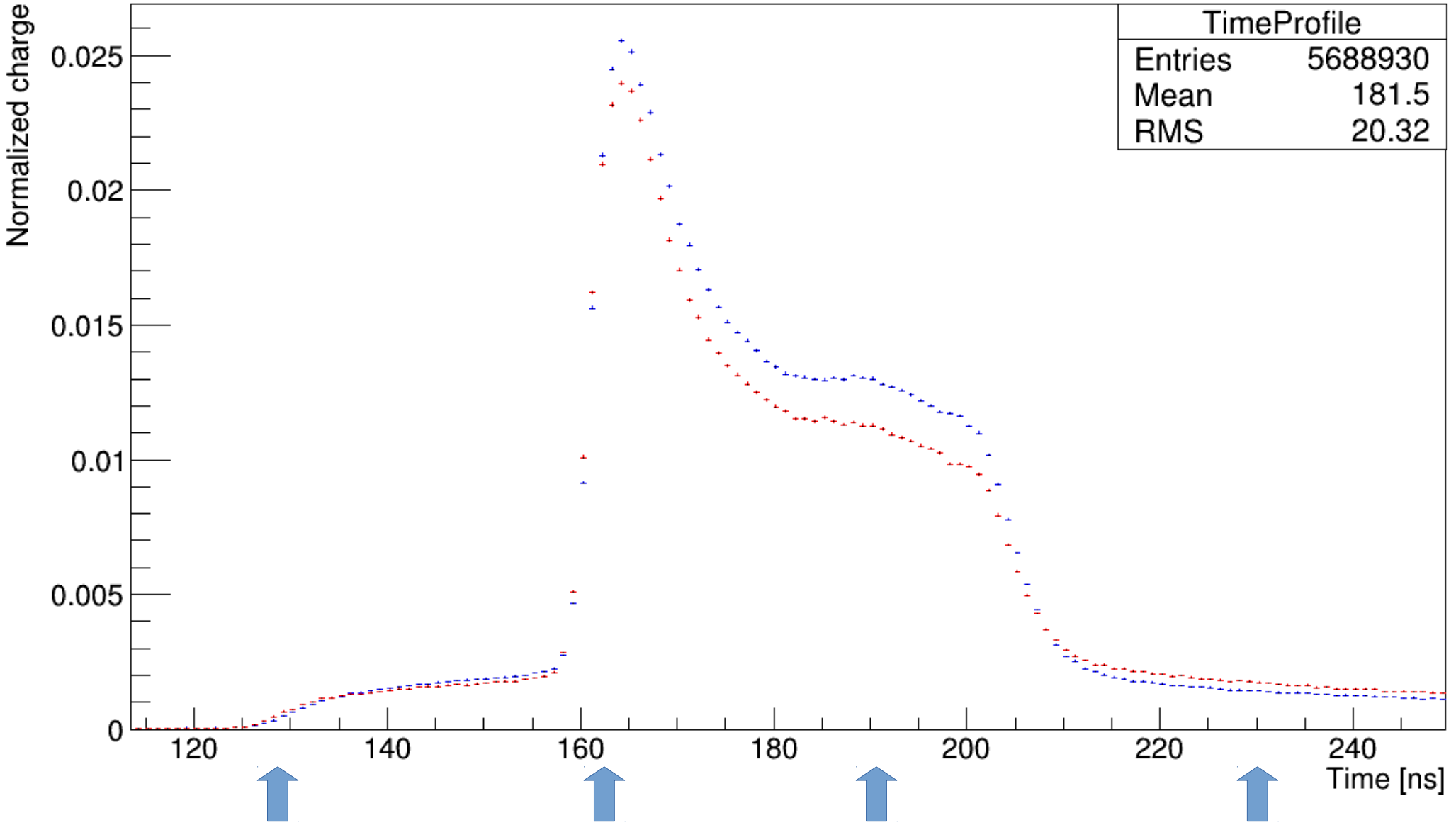


Charge per PMT (20” PMTs, 3” mPMTs)



1000 e-

Time profile (20” PMTs, 3” mPMTs)



Photons were created near the wall

Photons were created in the center of the tank

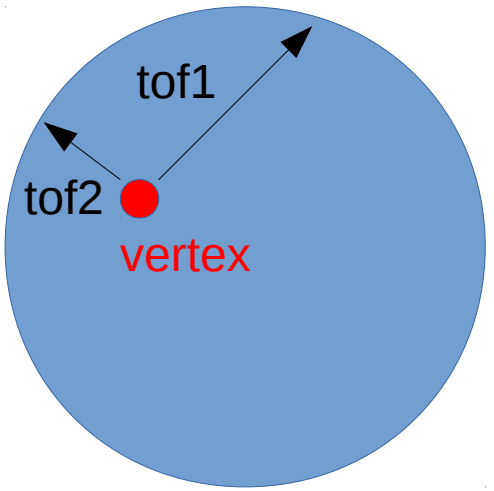
Scattered photons

Reflected photons

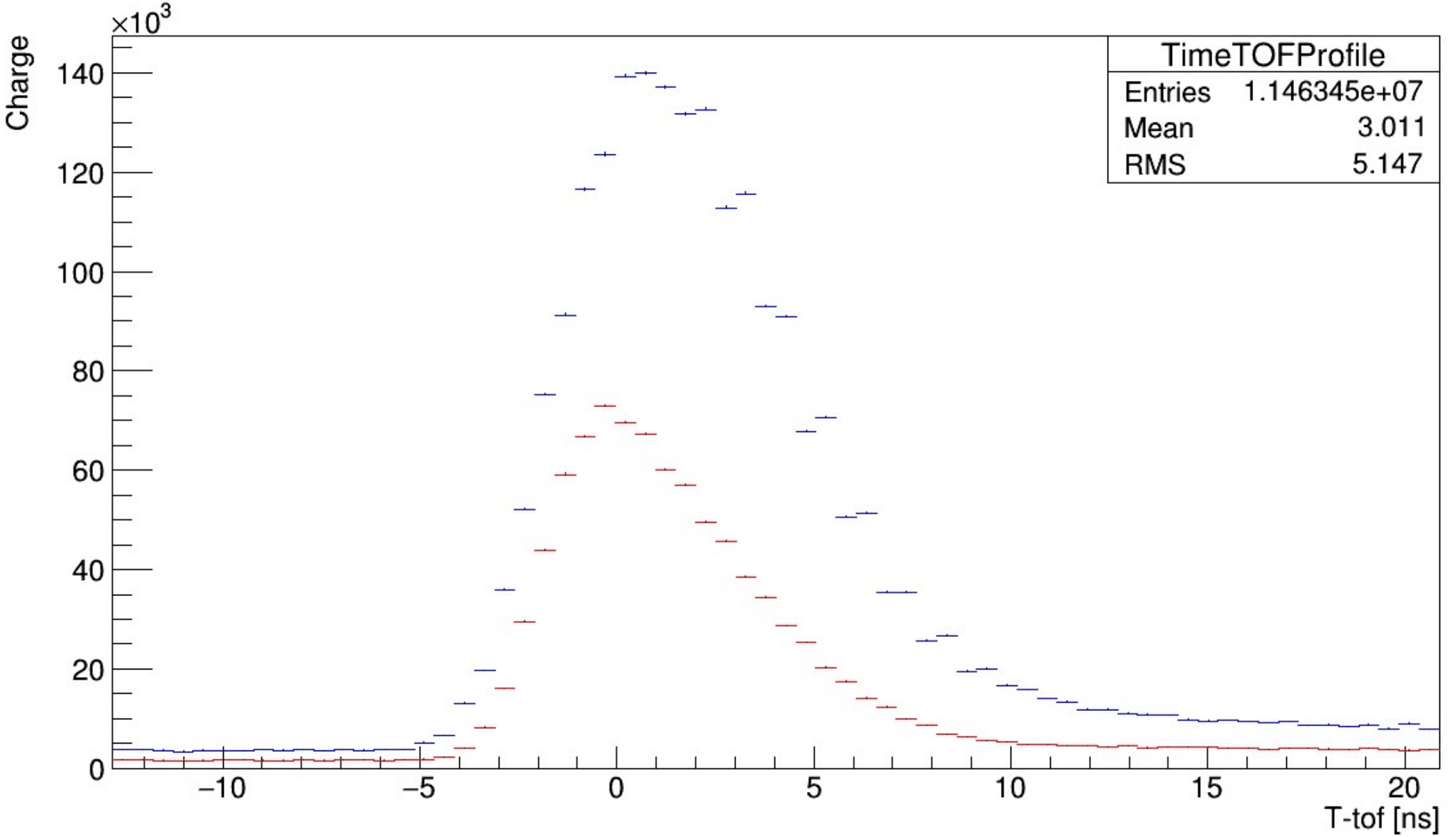
1000 e-

Time of flight

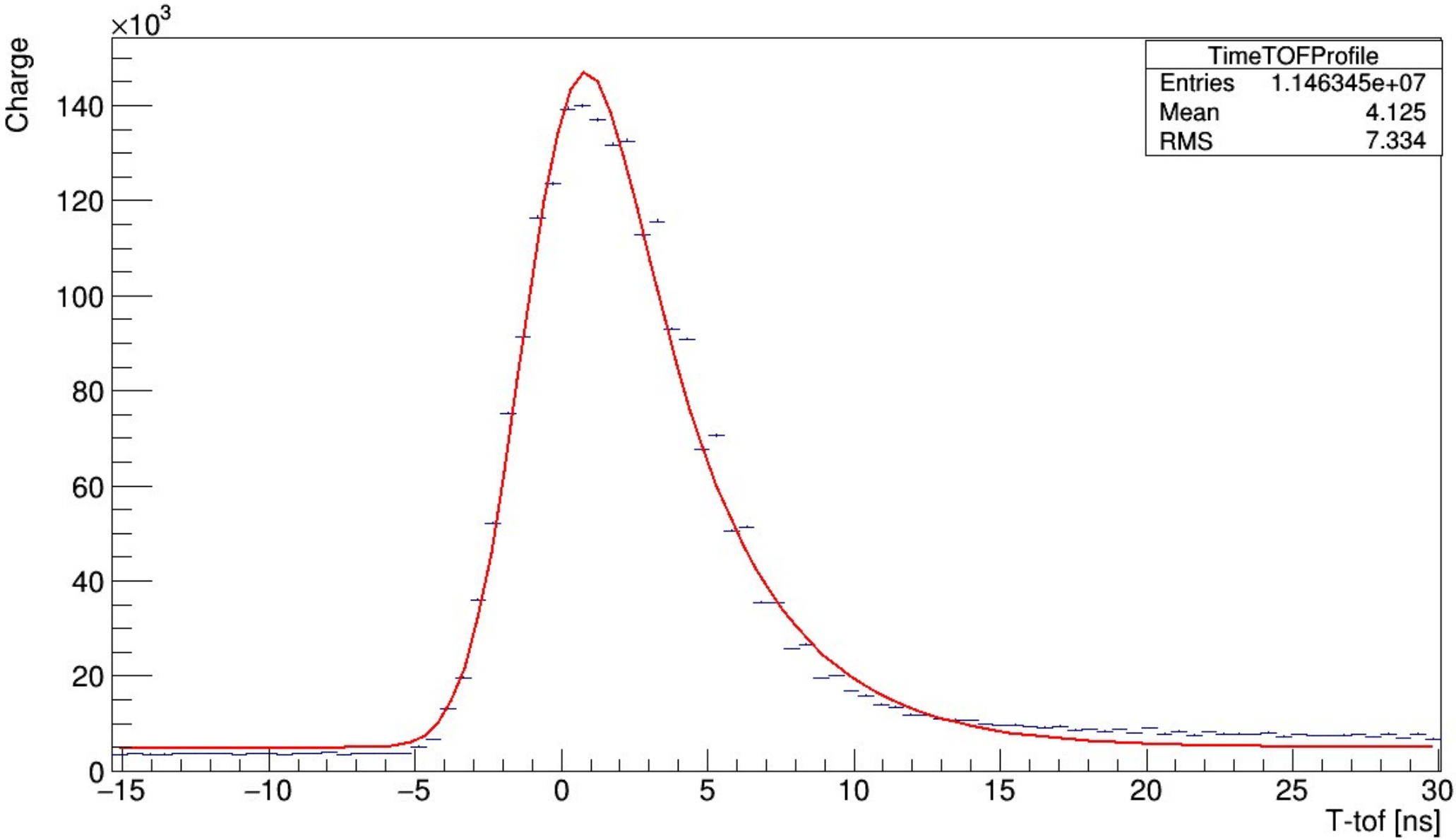
- Time (medium + PMT)
- Time of flight (medium)
- Time minus time of fligh = TTS



Time – time of flight profile (20’’ PMTs, 3’’ mPMTs)
10000 e-, 10 MeV



Time – time of flight profile (20’’ PMTs)

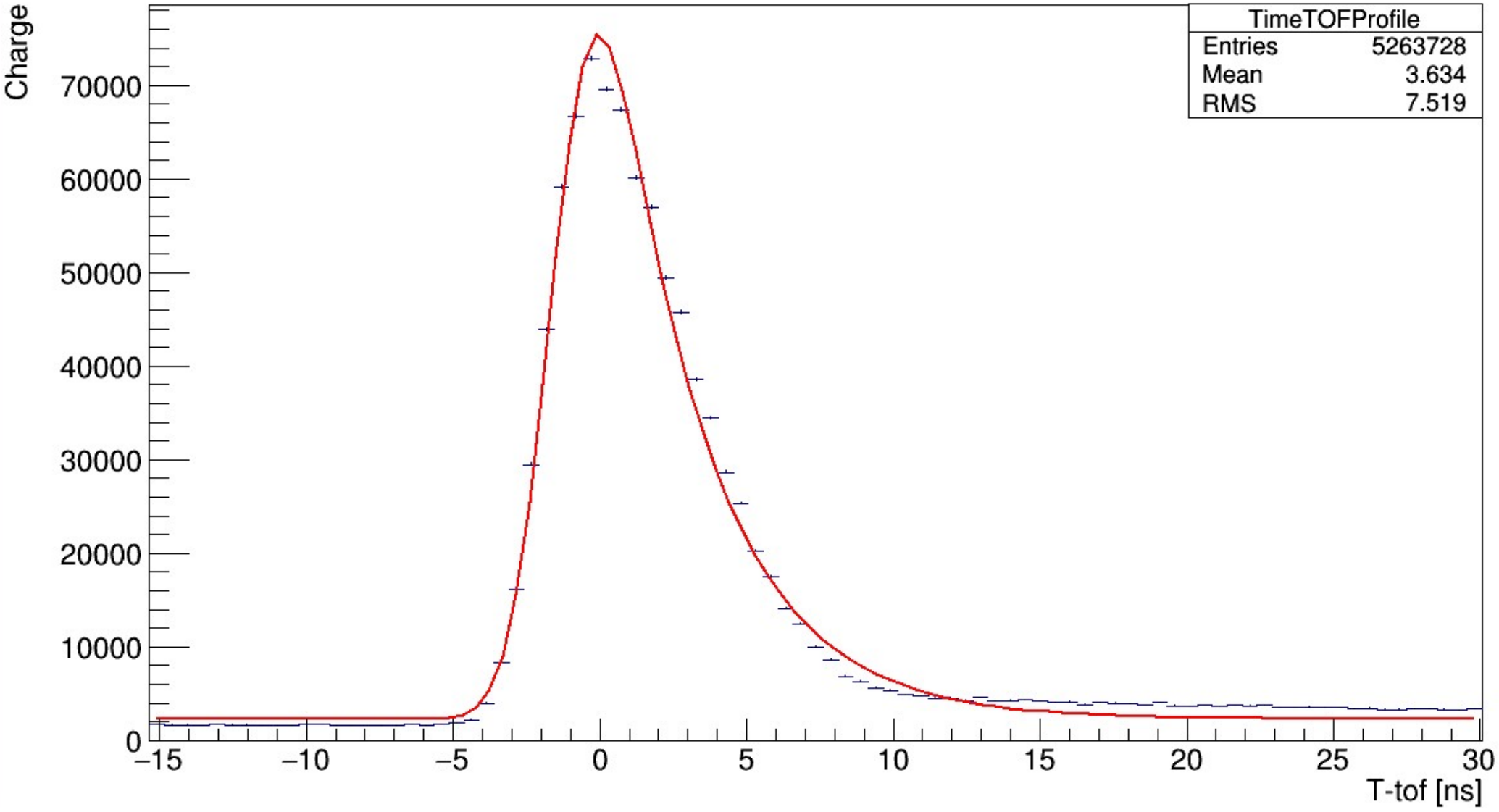


Fitting function: convolution Gaussian with exponential distribution

Sigma = 1.6 ns, FWHM = 2,35*sigma = 3,9 ns

Input: 2.6ns for 20’’ PMTs.

Time – time of flight profile (3’’ mPMTs)

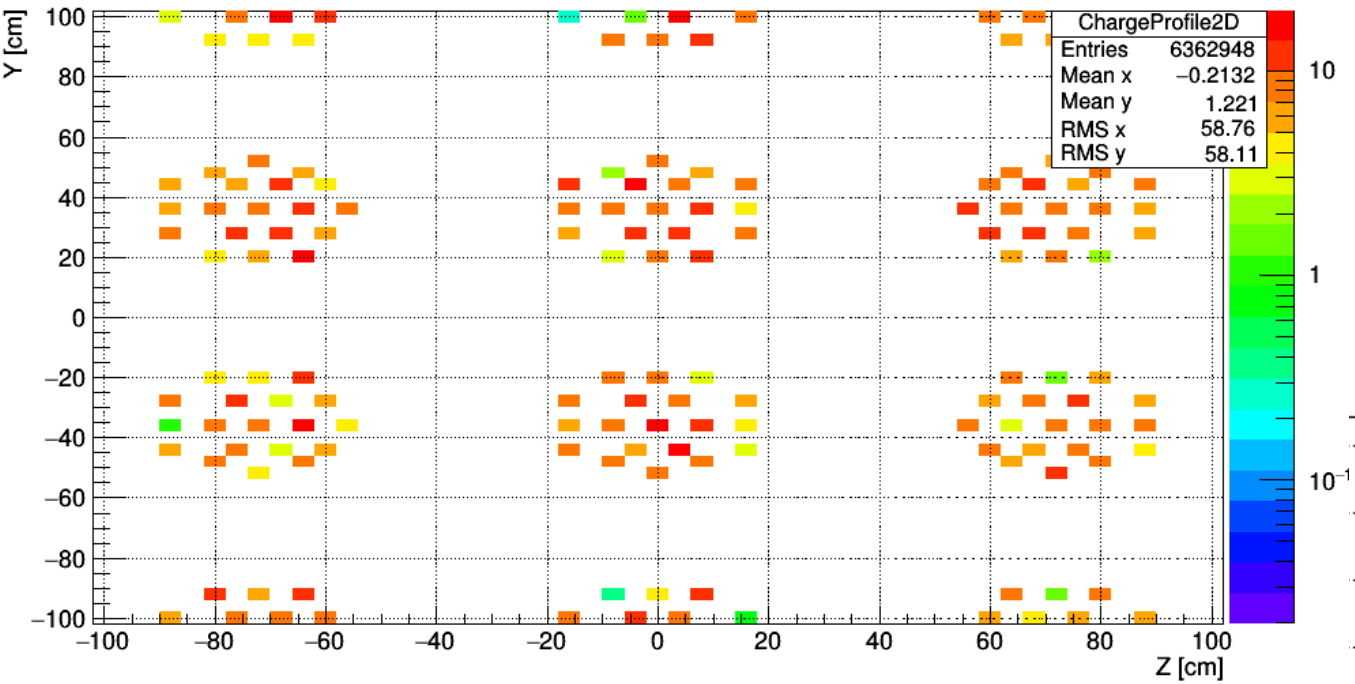


Sigma = 1.2 ns, FWHM = 2,35 * sigma = 2.8 ns

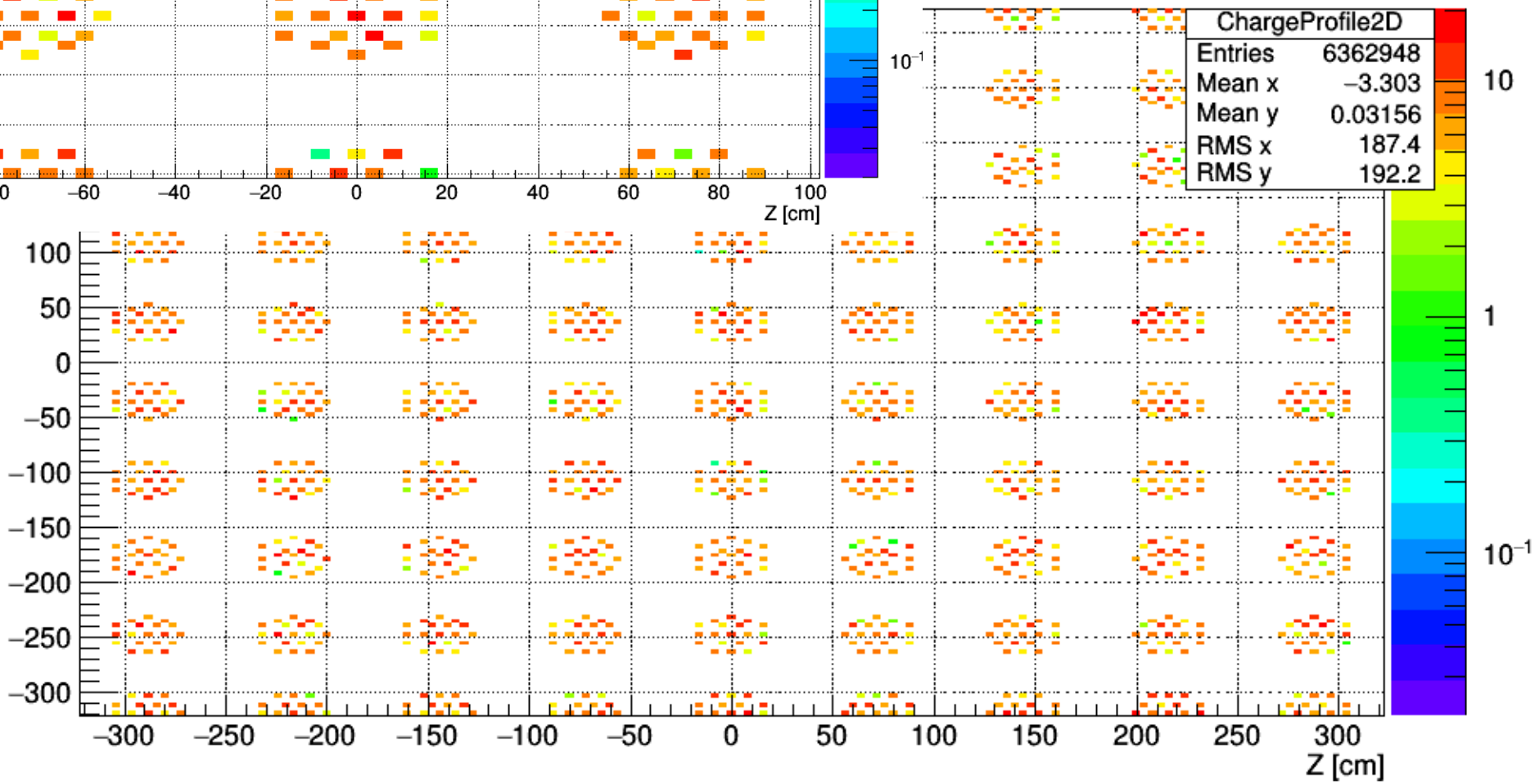
Input: 2.0ns for 3’’ PMT.

Charge profile 2D (40% coverage)

zoom-in



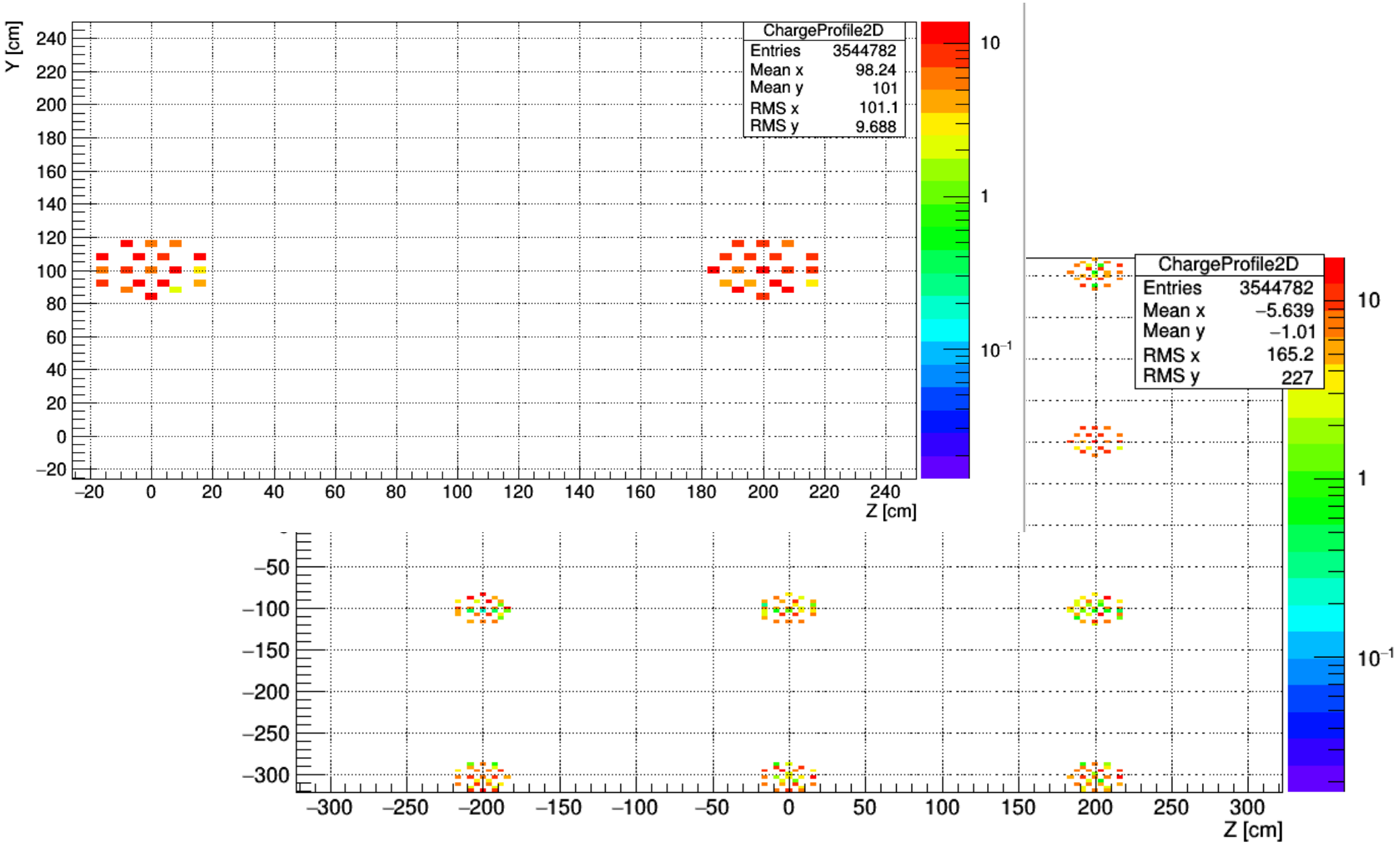
Gaps between modules: ~70 cm



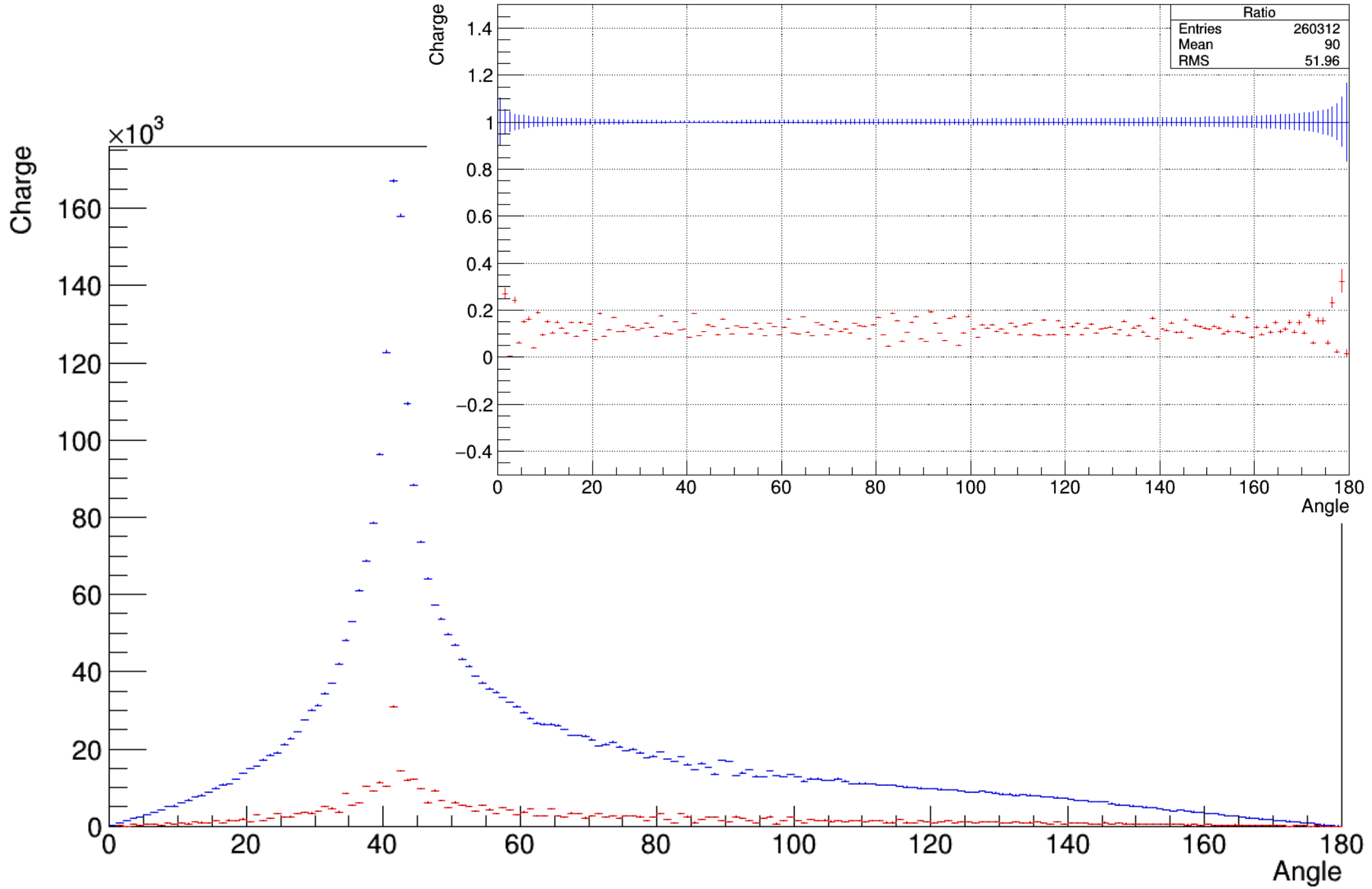
Charge profile 2D (5% coverage)

zoom-in

Gaps between modules: ~200 cm

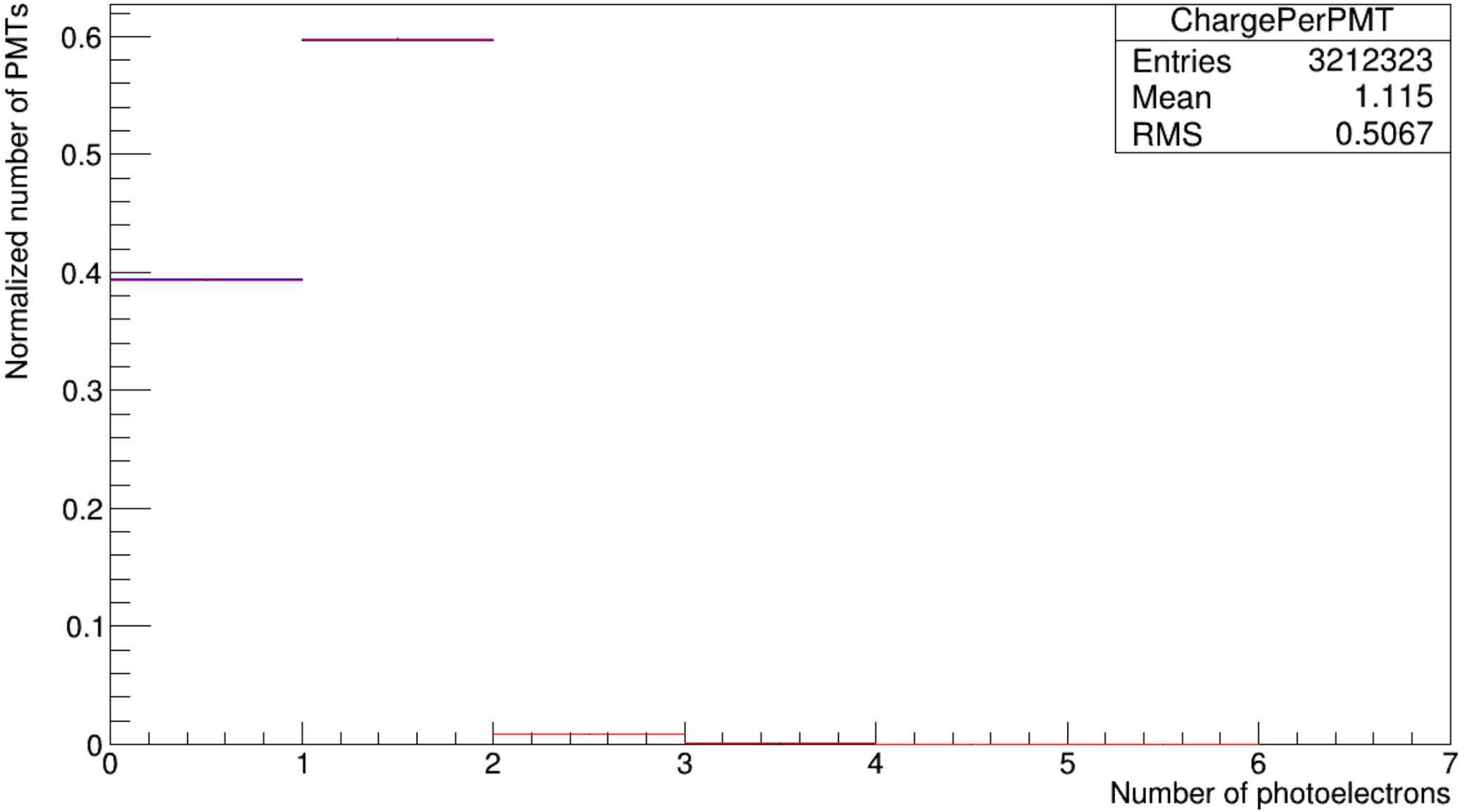


Charge profile mPMTs: 40% vs 5%

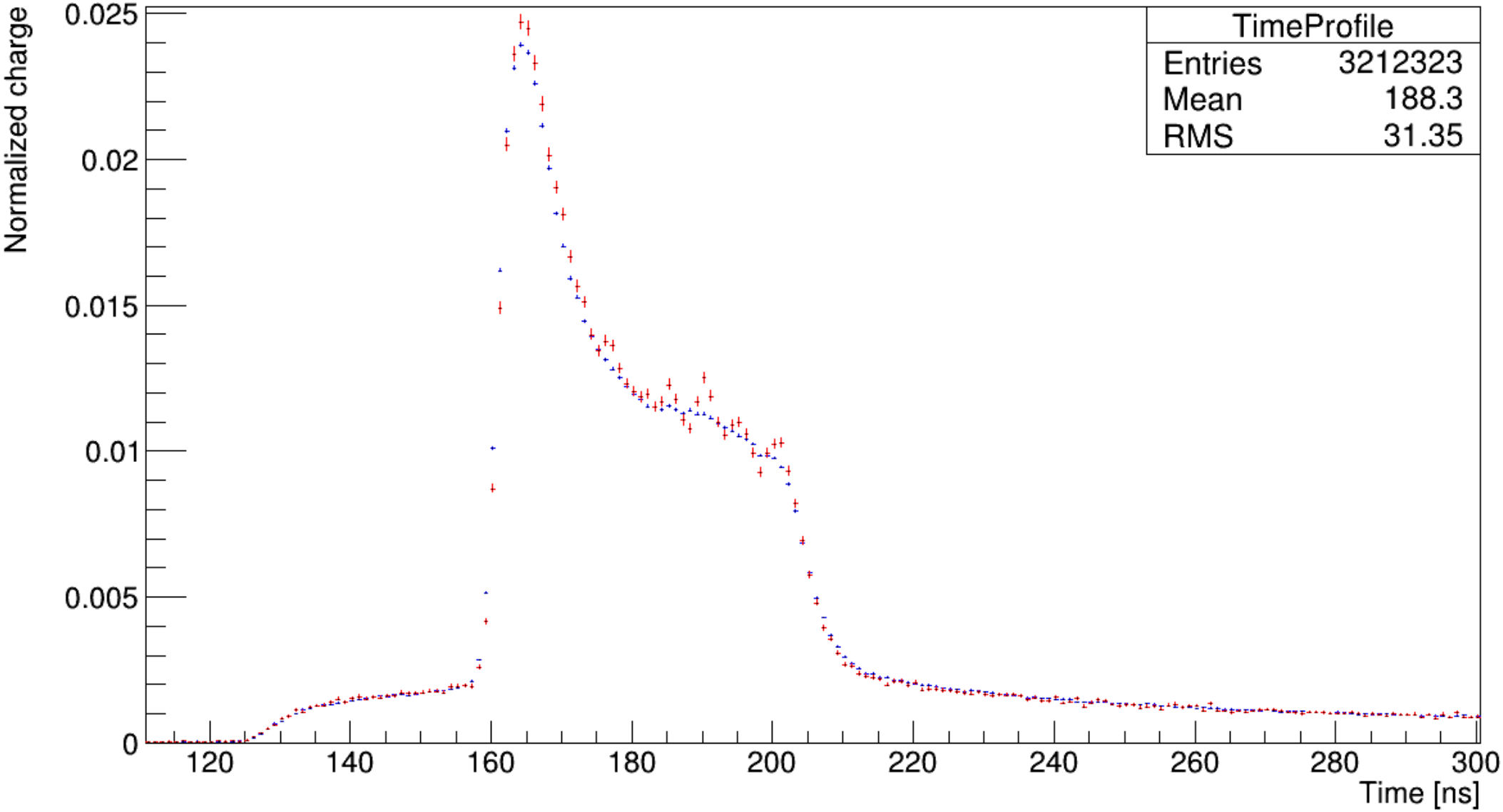


Integral2/Integral1 = 0.122746

Charge per PMT (coverage: 40%, 5%)



Time profile (coverage: 40%, 5%)



Conclusions

Small PMT:

- better time resolution
- smaller amount of p.e per PMT

Next steps

- Familiarization with the code (finding and changing parameters)
- Doing simulation with two kind of PMTs (20% 20” PMTs, 5% 19x3” PMTs).