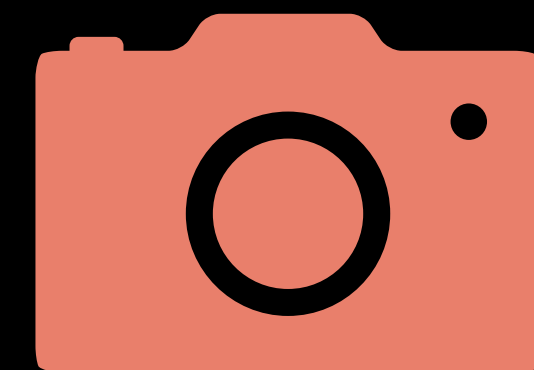
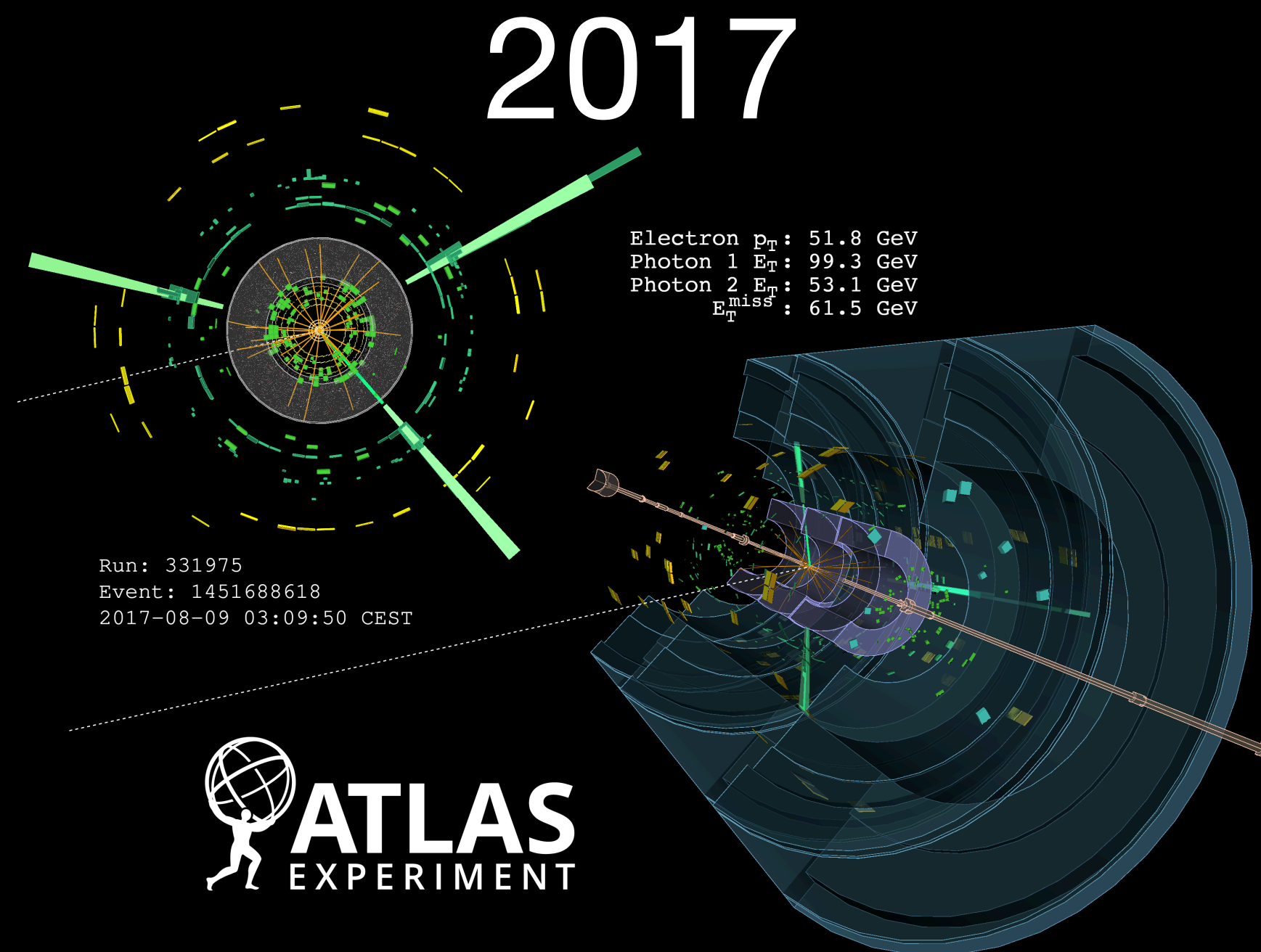


# PHYS 7363 - Experimental Particle Detection and Detectors I



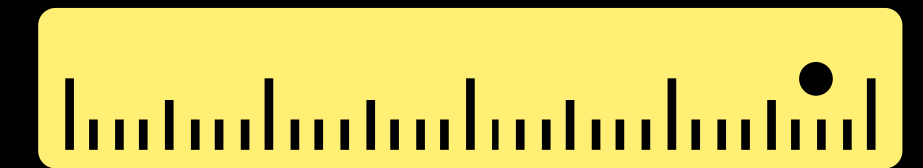
Particle detectors are the workhorses of experimental physics. In this course, we'll dive deep into their physics, exploring the incredible evolution of our experimental techniques over the past nine decades. You'll gain a solid understanding of *particle detection and identification*, examine the intricate designs of modern detectors, and learn how machine learning is being harnessed to push the boundaries of detector design. If you're intrigued by how we “see” subatomic particles, this course is for you!



Detect



Identify



Measure

To discuss prerequisites (and any questions on the content of the course), please contact me: [saptaparnab@smu.edu](mailto:saptaparnab@smu.edu)



# Schedule

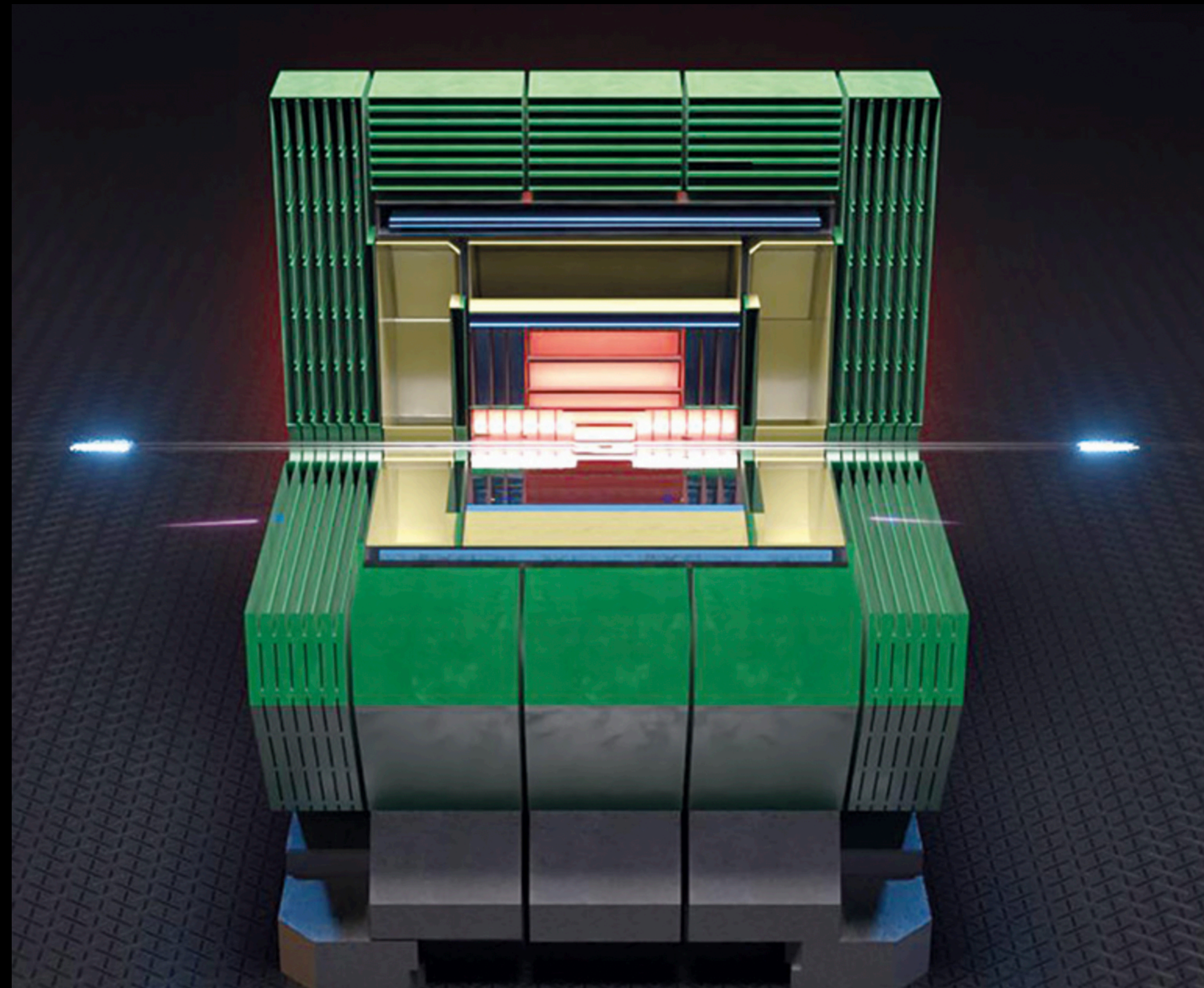
Month	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
August	18	19	20	21	22	23	24
	25 ✓	26	27	28	29 ✓	30	31
September	1	2	3 ✓	4	5 ✓	6	7
	8 ✓ ← 1.5 hours →	9	10	11	12	13	14
	15 ✓ 1.5 hours	16	17 ✓ 1.5 hours	18	19 1.5 hours	20	21
	22 1.5 hours	23	24 1.5 hours	25	26 1.5 hours	27	28
	29 1.5 hours	30	1 1.5 hours	2	3 1.5 hours	4	5

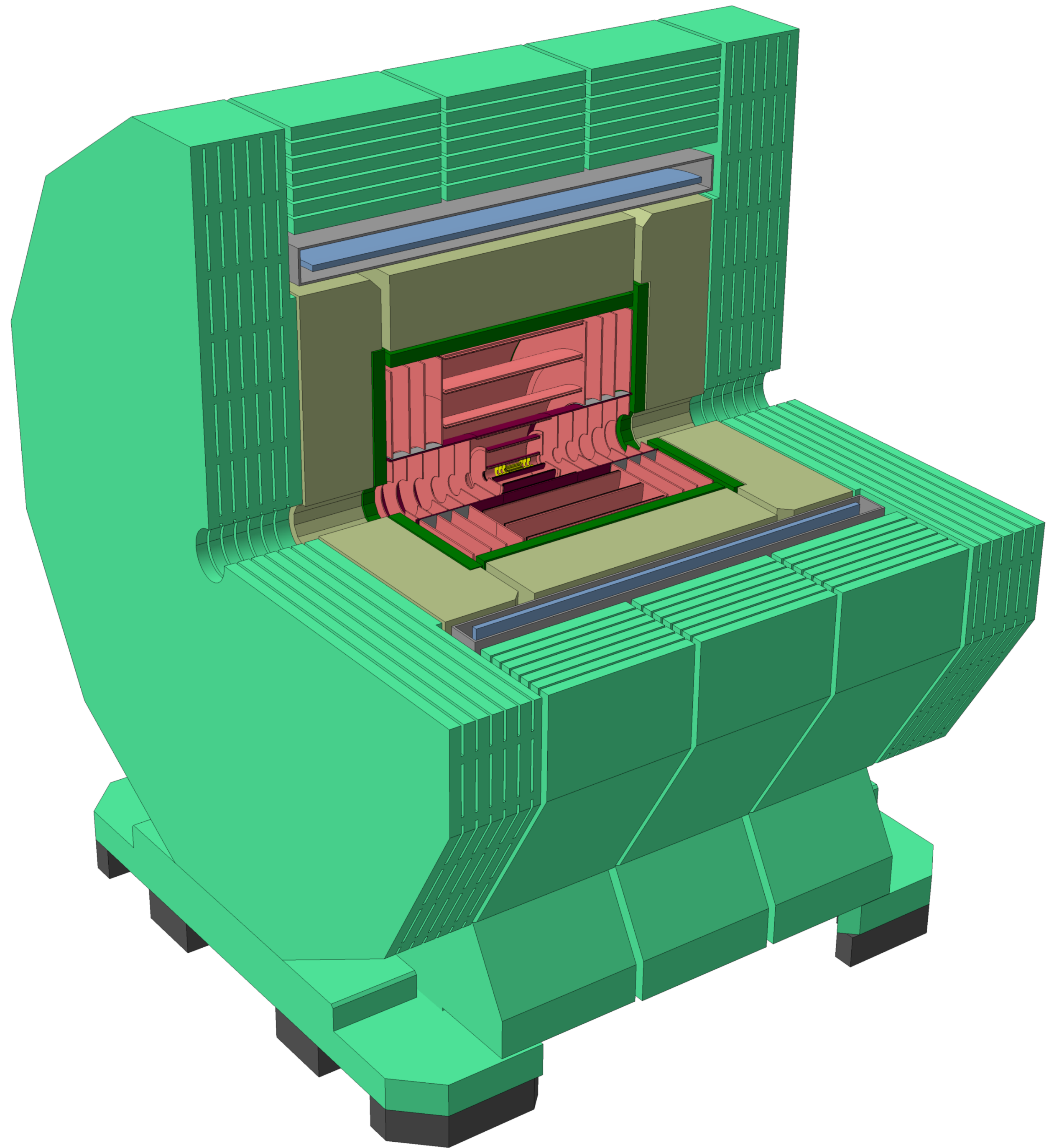
# Schedule

Month	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
October	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	1	2
November	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
December	1	2	3	4	5	6	7
	8	9	10	11	12	13	14

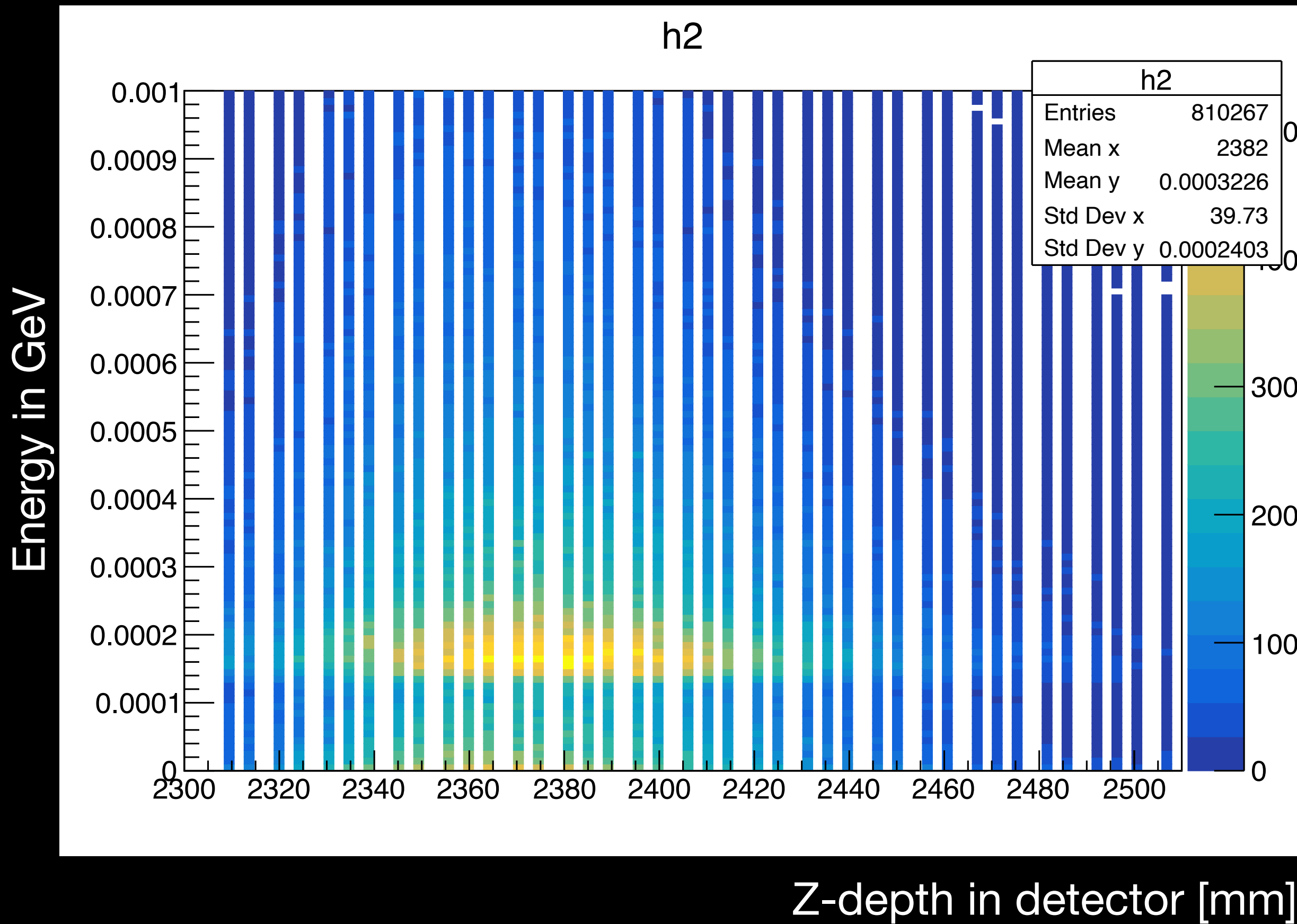
# Setting up the code

- FCC-ee: <https://fcc-ee-detector-full-sim.docs.cern.ch/CLD/>
- Muon collider: <https://mcd-wiki.web.cern.ch/software/tutorials/fermilab2024/>

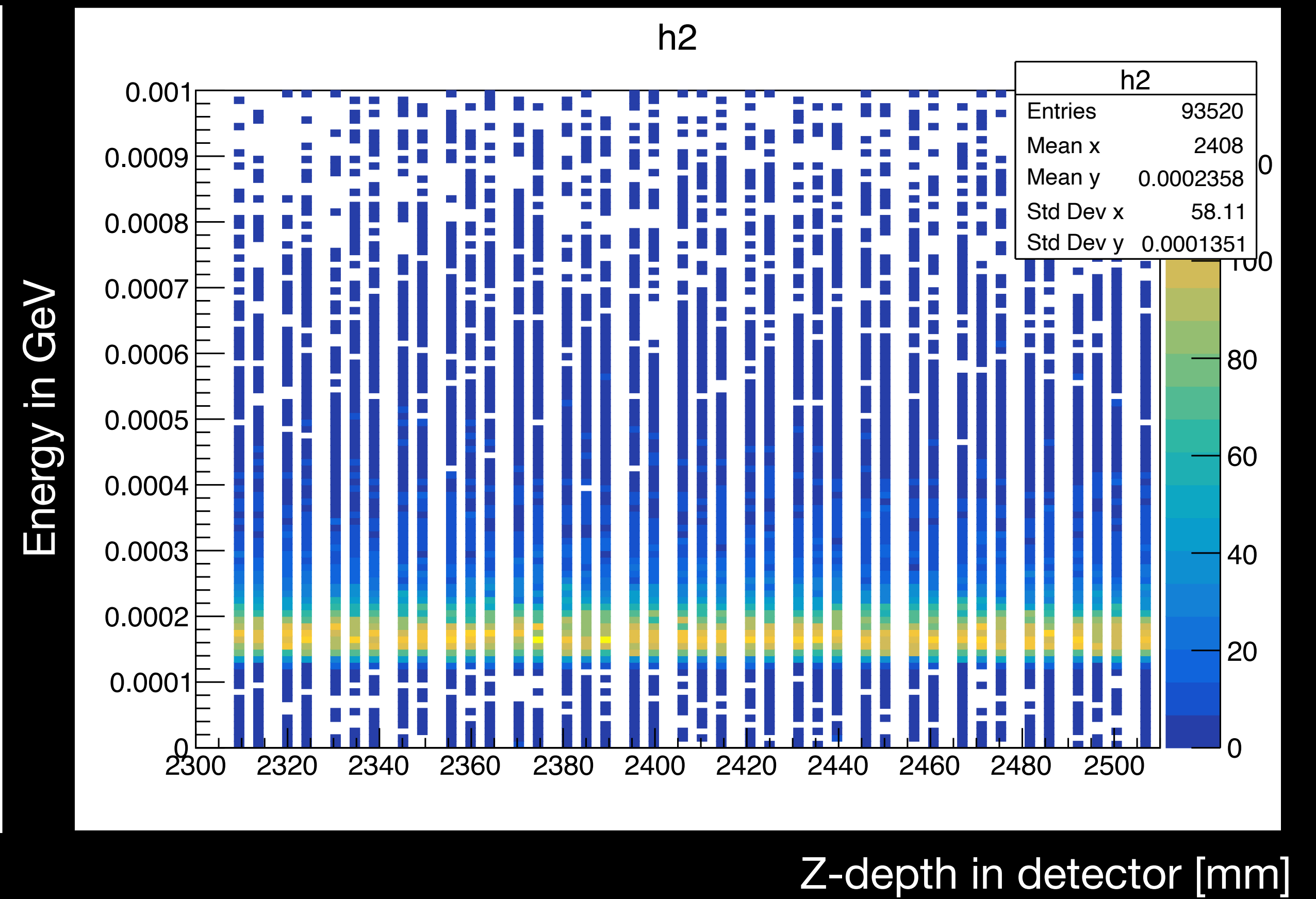




# Shower visualization

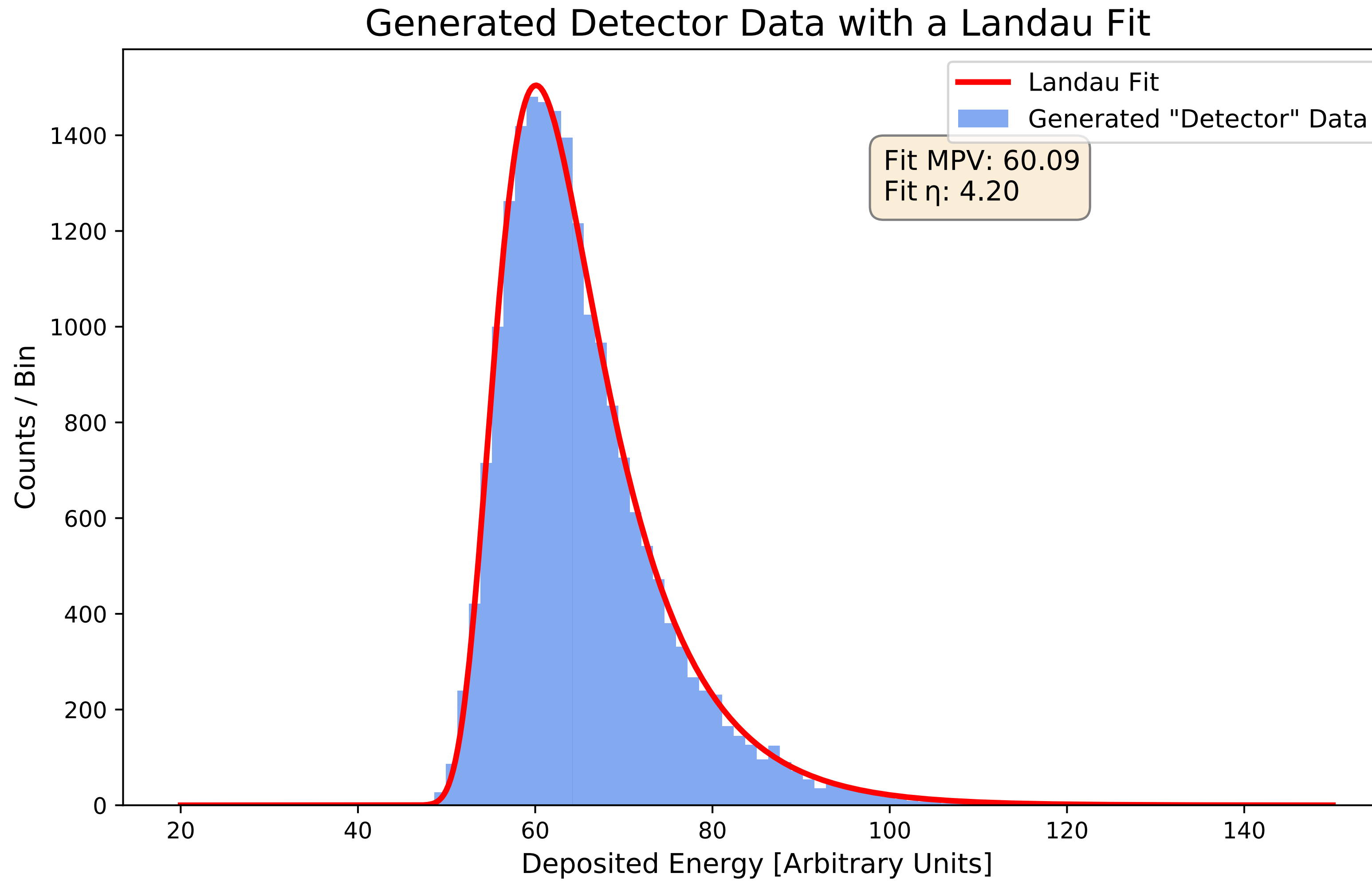


Electrons



Muons

# Fitting exercise



# Semiconductor detectors