

Week 5 – February 22/24, 2022

LHC Experiments

Objectives

- Review history of HEP experiments
- Identify design and choice of hardware for ATLAS/CMS
- Understand current state of detector upgrades in CERN's long-term plan

HW due Today:

- Prepare 5-min presentation of your paper, send slides/outline/notes ahead of time via email
- Set of questions on last slide from last week

HW due Thursday Feb 24th: None

Class Outline

- Presentations (45 min max)
- What's a particle?
 - Classical vs QM vs QFT
 - Rutherford's gamma rays, plus the alphas and the betas
 - What other particles are there
- Cloud Chambers
 - What are they?
 - Discovery of muon
- Neutrino Experiments
 - Gargamelle at CERN
- Typical Particle interactions in detectors
 - General purpose detectors => ATLAS/CMS
 - Specialized => ALICE/LHCb