

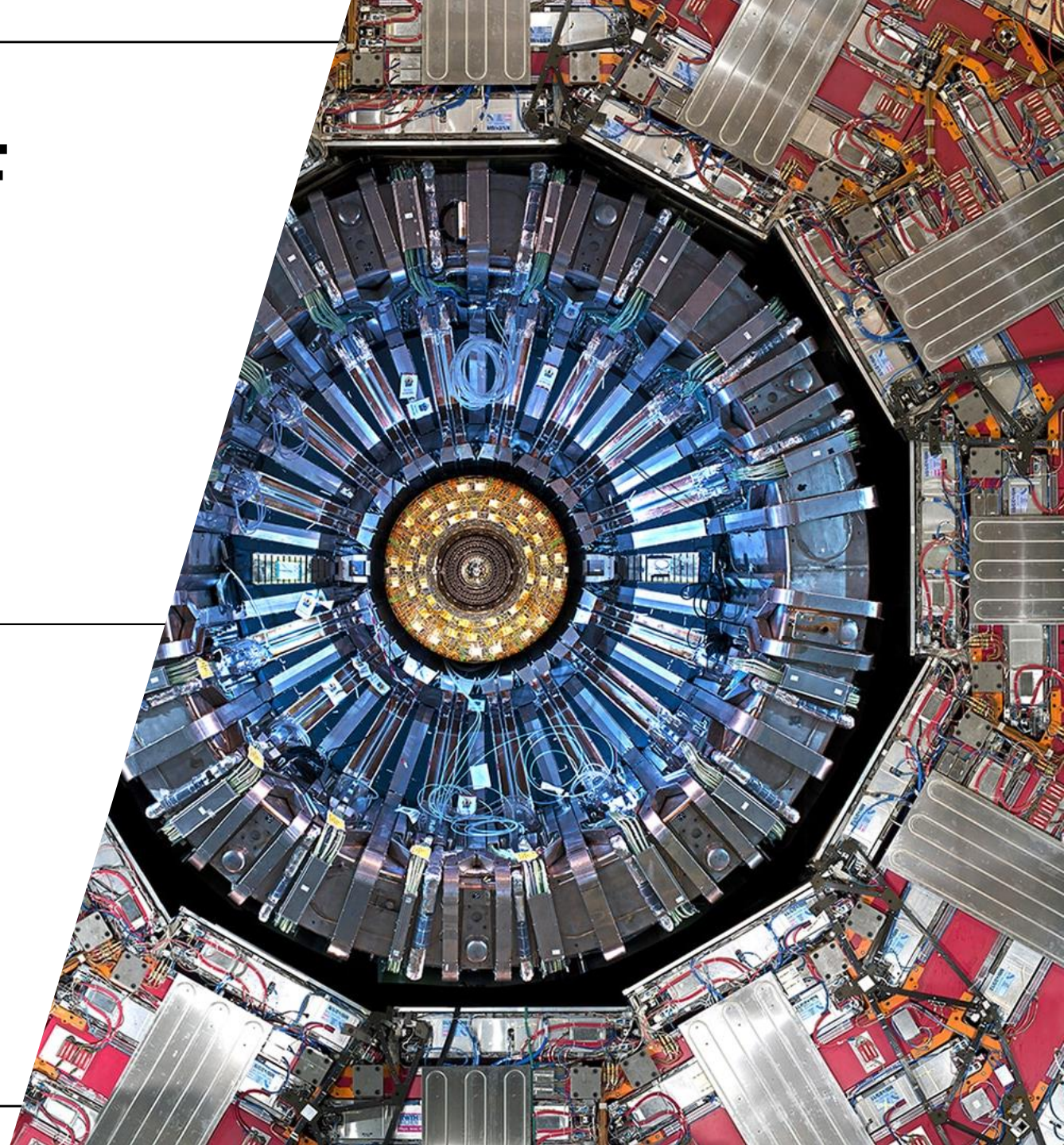
DEVELOPMENT OF CMS TRACKER MONITORING SOFTWARE AND DATABASE

Jenny Lunde

Supervisor NTNU: Jon Andreas Støvneng

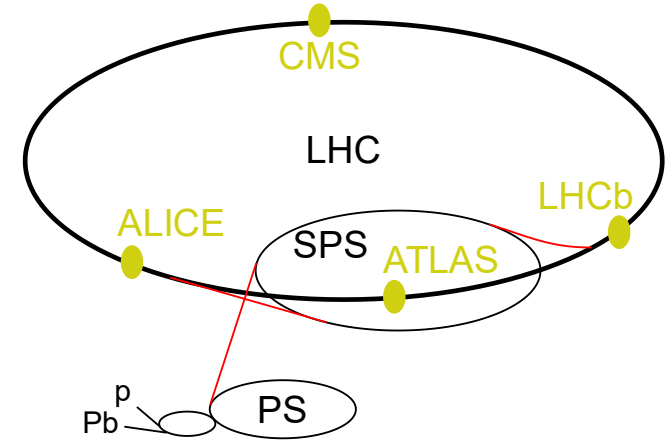
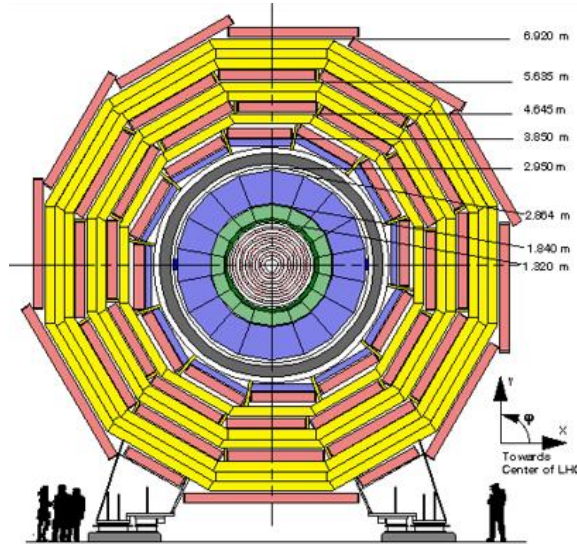
Supervisor CERN: Giulia Negro, Annapaola de Cosa, Stefano
Merci

EP-CMX-DA

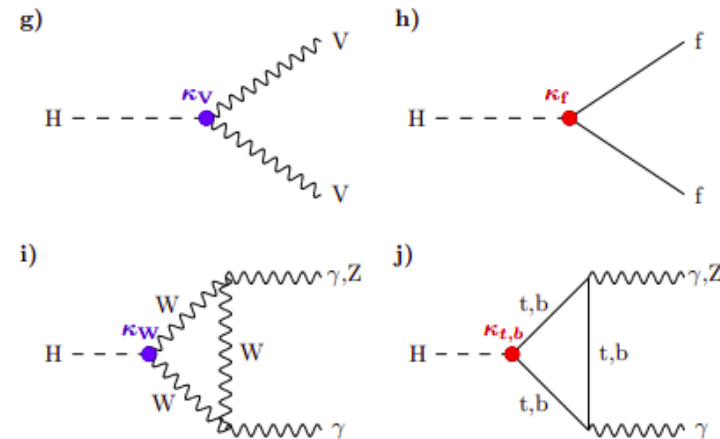


CMS Detector

- Multi purpose particle detector
- Detected Higgs boson in 2012
- Testing theories from SM
- Dark matter
- Extra dimensions



Higgs boson decay channels



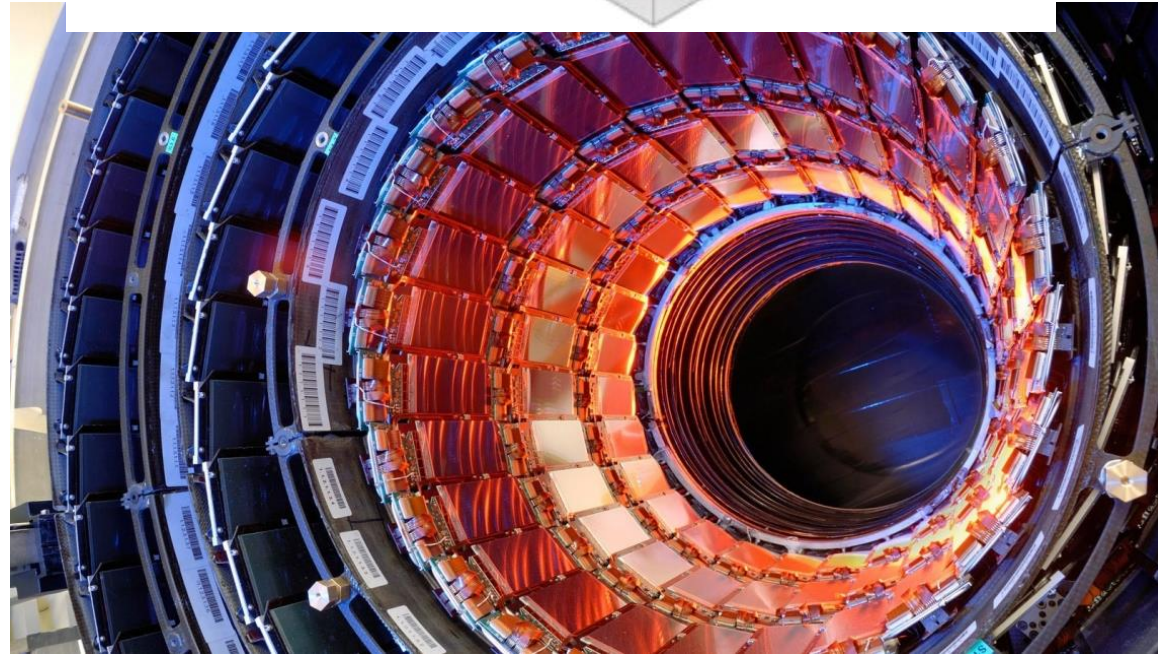
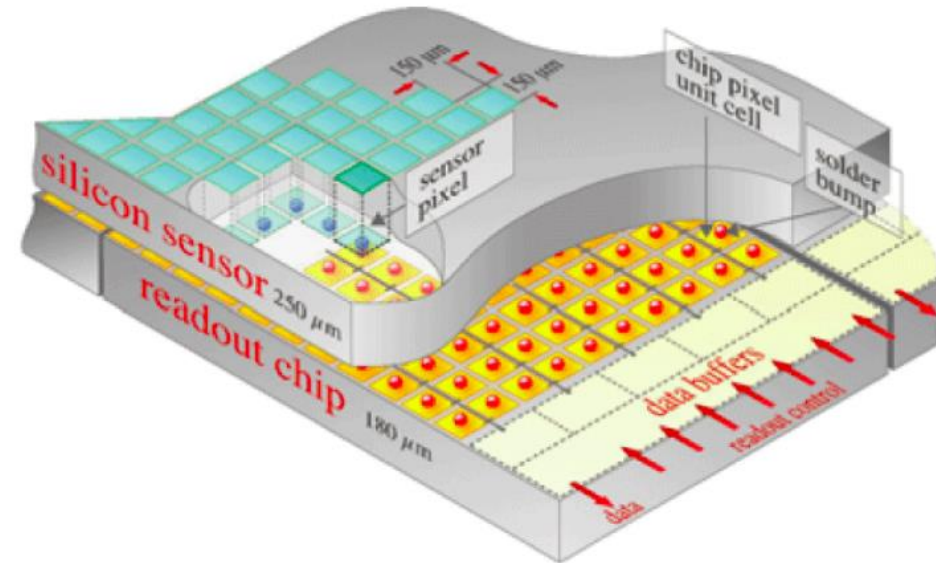
https://www.researchgate.net/figure/Transverse-view-of-the-CMS-detector_fig7_37678004

https://ht.wikipedia.org/wiki/Large_Hadron_Collider

<https://cds.cern.ch/record/2814513/files/CMS-HIG-22-001-arxiv.pdf>

CMS Tracker

- Traces the position of particles
- Silicon pixels
- Reconstructs the path of particles as they move through a magnetic field
- Have to handle high radiation over time



<https://cms.cern/detector/identifying-tracks/silicon-pixels>

<https://cms.cern/detector/identifying-tracks>

CMS Tracker Monitoring

- Calibrations
- Ensure all pixels are working
- Avoid accidents
- Radiation damage

