



[www.cern.ch](http://www.cern.ch)

Summer Student Project

# **GE1/1 Super-Chamber Assembly**

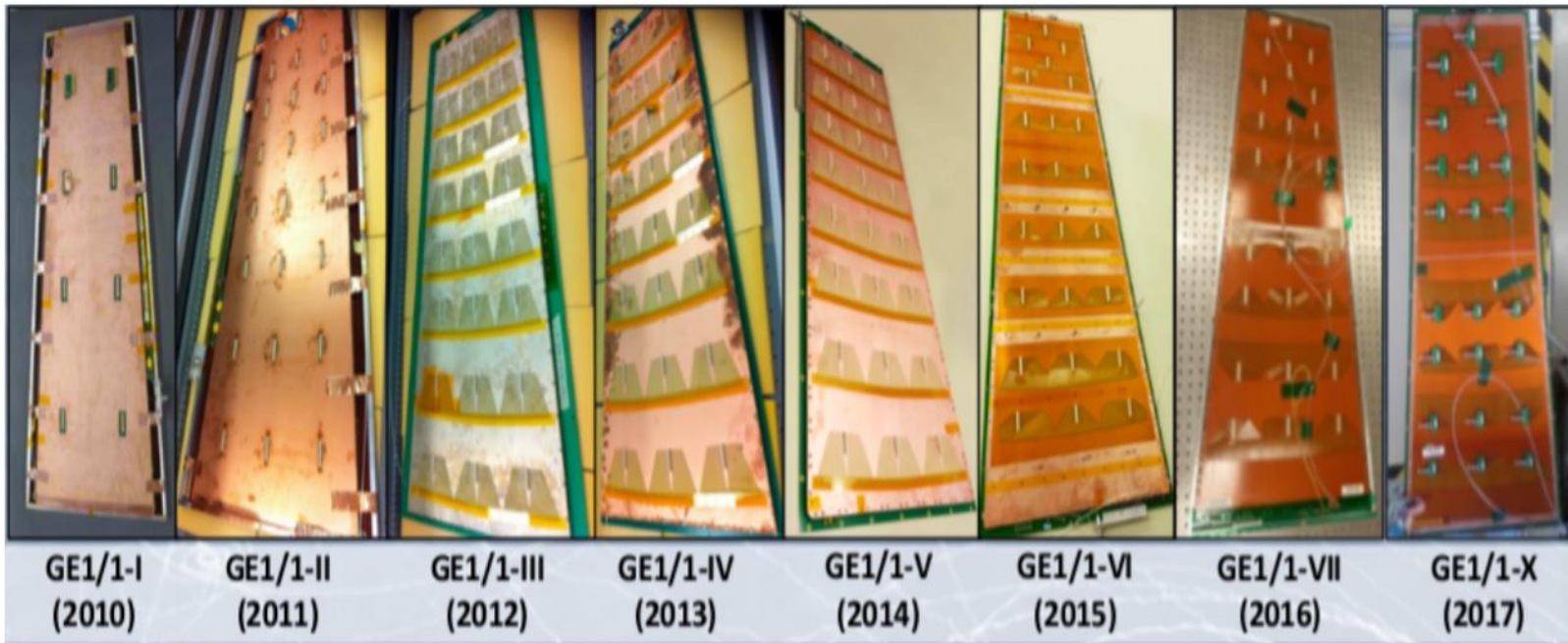
**Rahul Venkatram**  
CERN, August 2019

# Agenda

- Design Evolution
- Super-Chamber Assembly
- Quality Control & Assurance
- Conclusions

# Design Evolution

- Evolution of GE1/1 detector's generation-I to generation-X

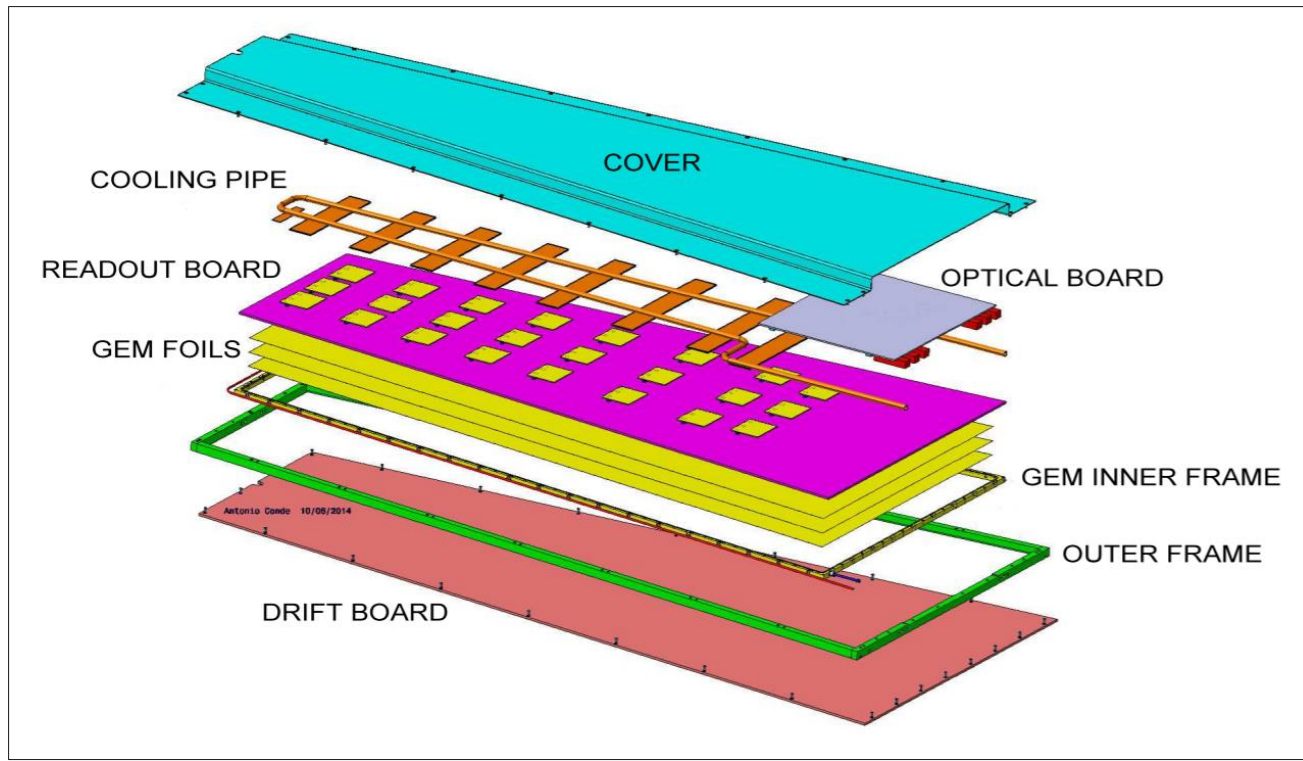


# Design Evolution

- Improved overall muon trigger
- Improved time response
- More precise tracking
- Higher detection efficiency
- Sustain radiation environment for long-term

# Super-Chamber Assembly

- Mechanical design of a Single GE1/1 Chamber

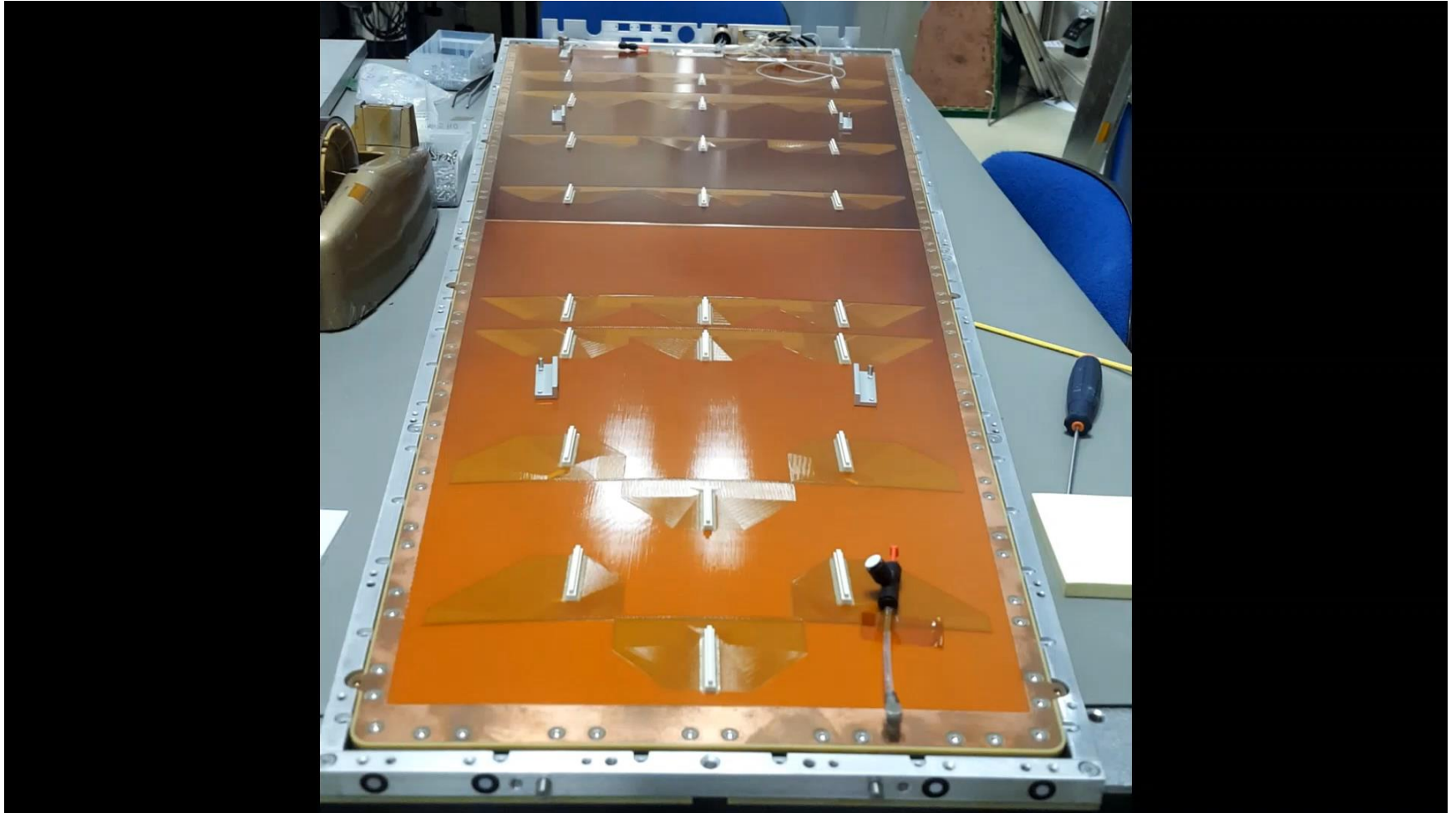


# Super-Chamber Assembly

- Insulating the cover
  - Kapton foil as insulator
  - Noise reduction



# Super-Chamber Assembly





# Super-Chamber Assembly



# Quality Control & Assurance

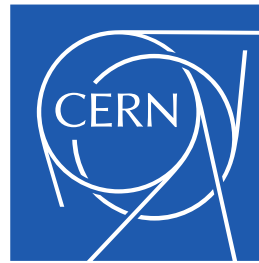
- Optical inspection & cleaning of components
- Leakage current test
- Gas leak test
- HV test
- Gain uniformity test
- Cosmic ray test



# Conclusions

- Design changes improve tracking & triggering
- Assembly processes simplified
- Quality control & assurance ensures components work properly
- Generation-X detectors installed at the CMS

# Questions?



[www.cern.ch](http://www.cern.ch)