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Summer Student Project

GE1/1 Super-Chamber Assembly

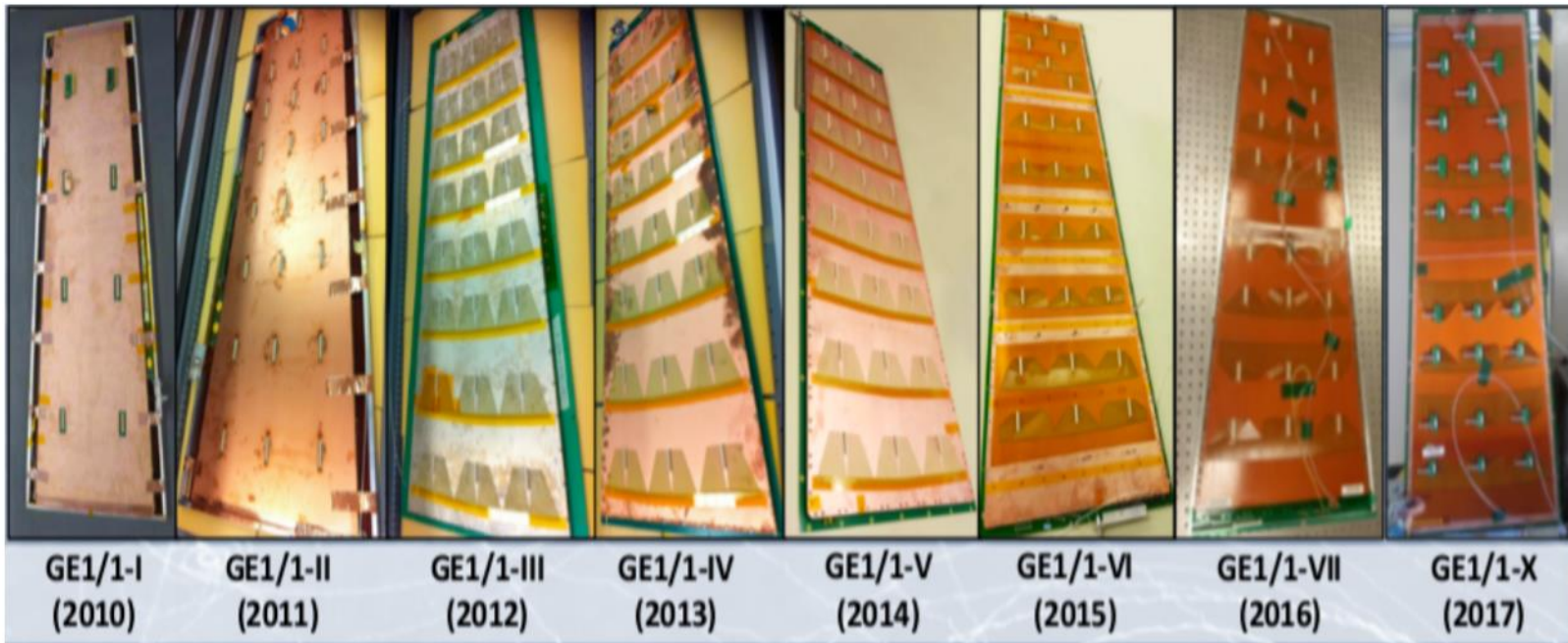
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CERN, August 2019

Agenda

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

Design Evolution

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

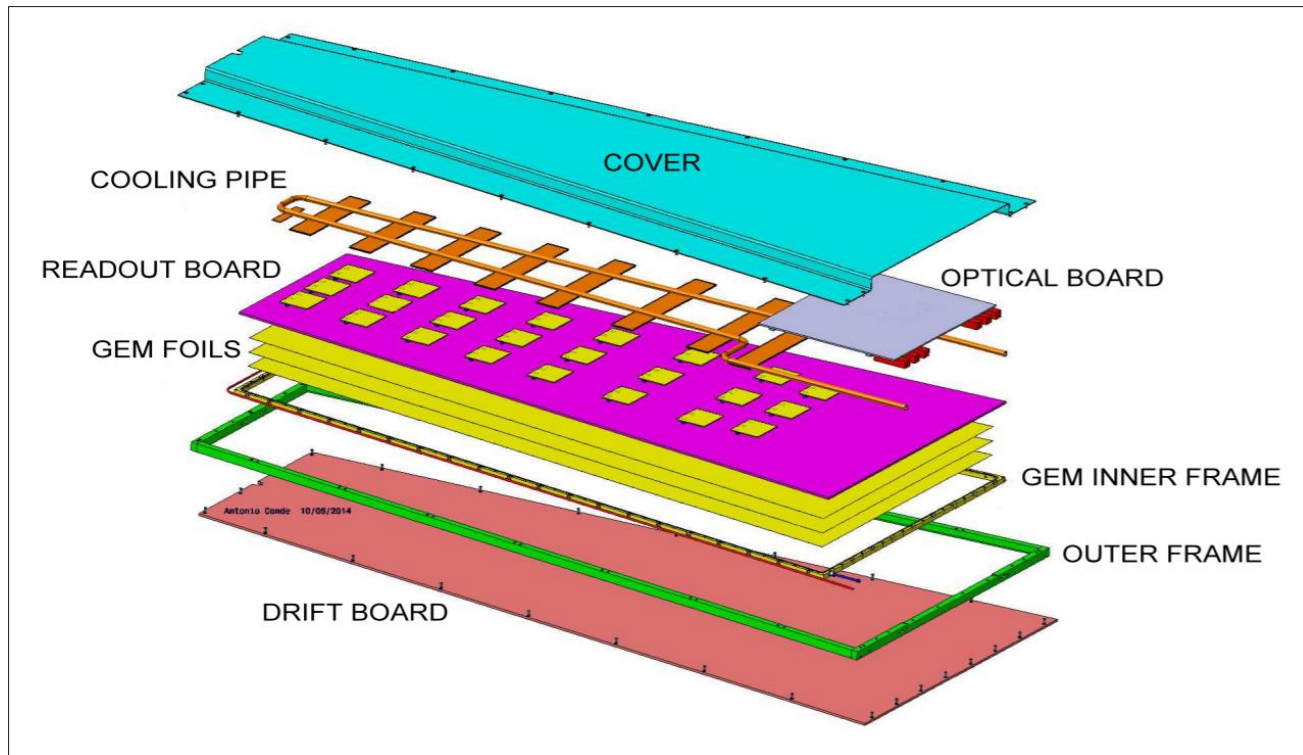


Design Evolution

- 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

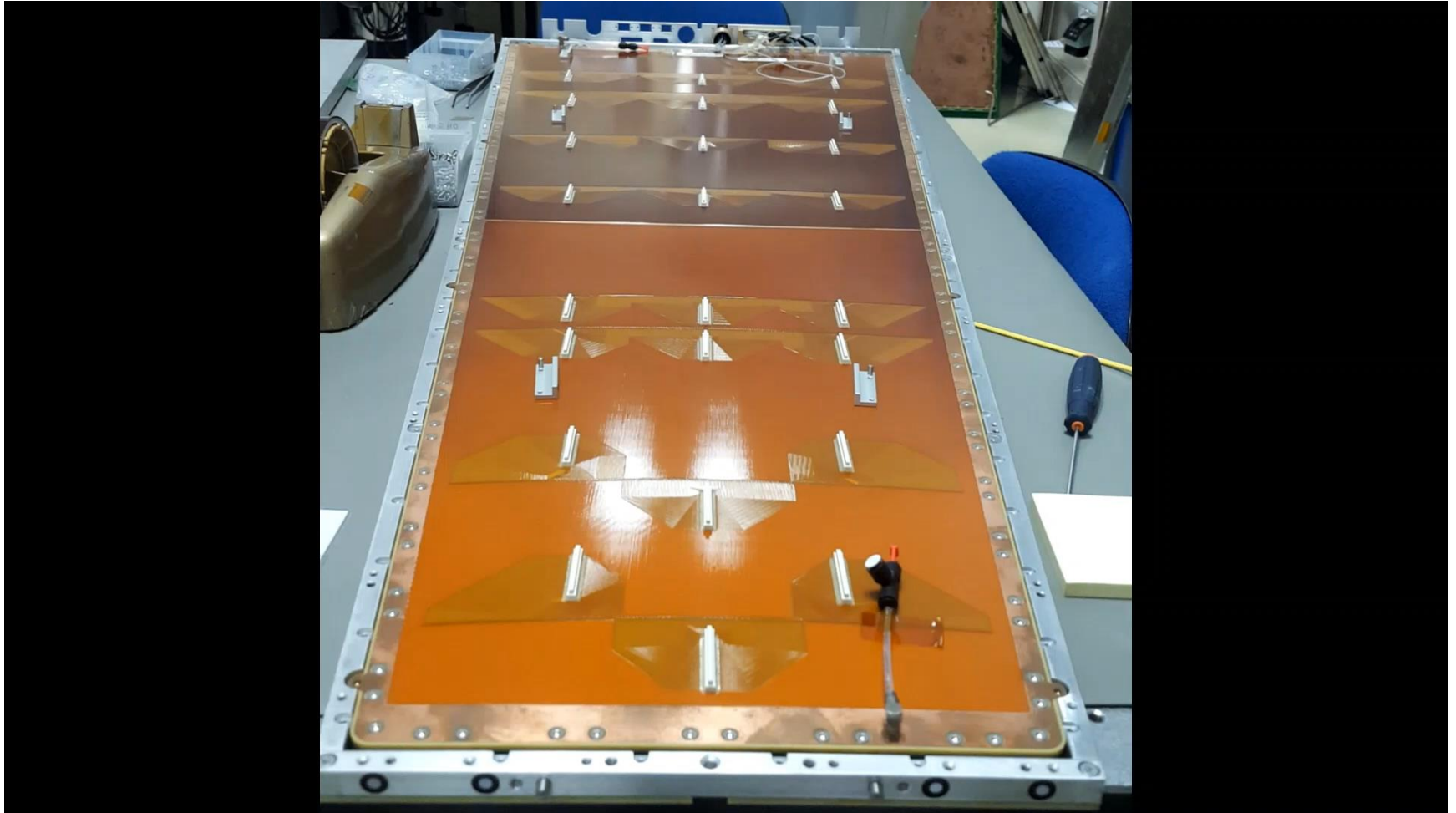


Super-Chamber Assembly

- 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?



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