

CLOUD, NA62 and CLIC

- CLOUD – something completely different
- NA62 - a FT experiment for Kaon decays
- CLICdp - CLIC detector and physics study

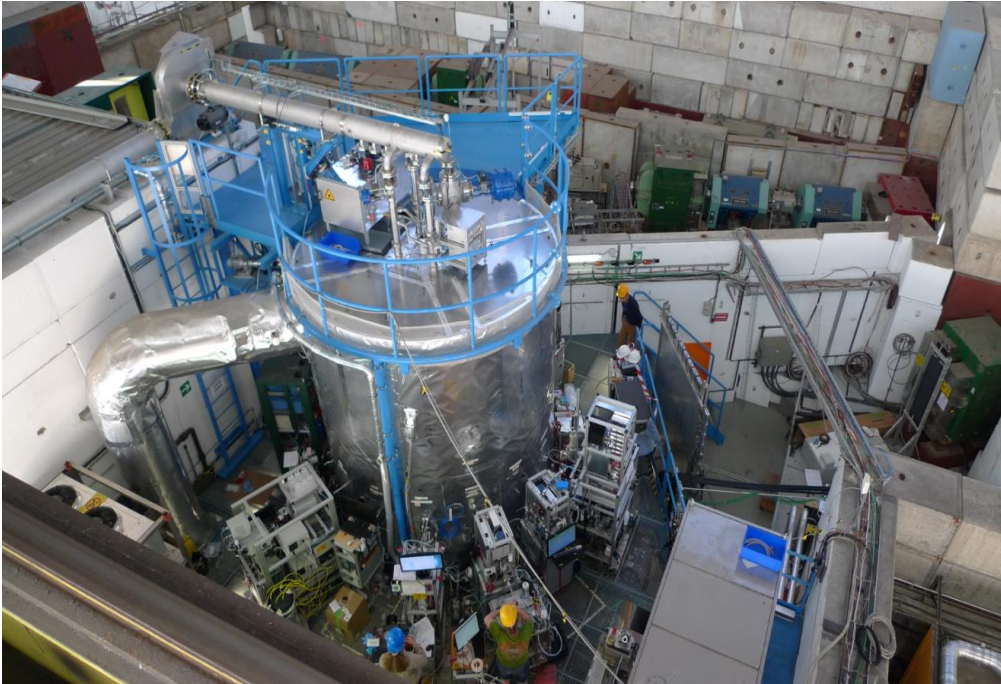




The **CLOUD** experiment

Cosmics Leaving **O**utdoor **D**roplets

CLOUD



CLOUD studies

- anthropogenic (man-made)
- cosmic-ray

effects on formation of atmospheric aerosols and therefore on Earth's climate.



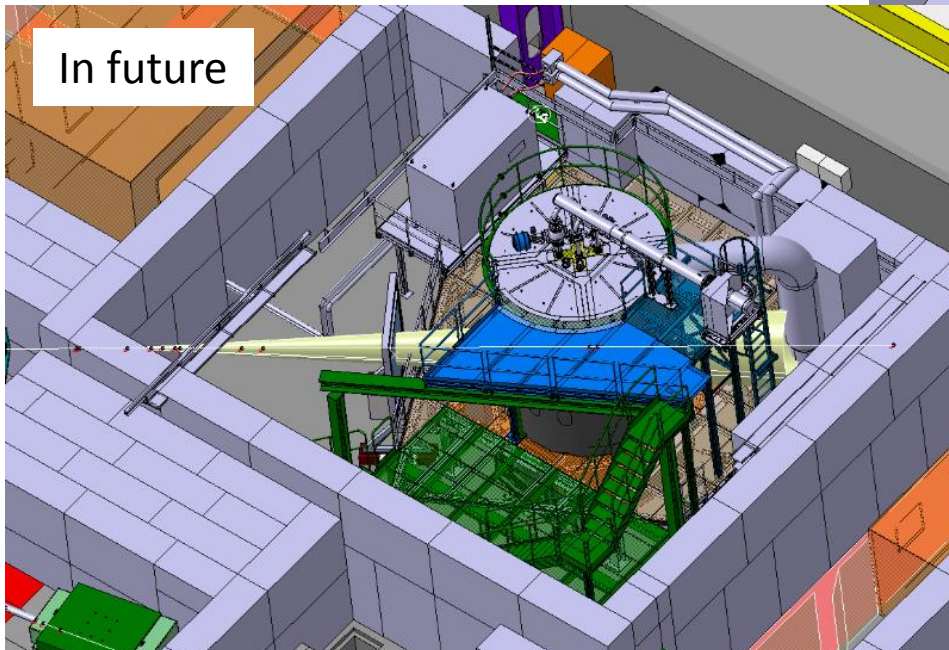
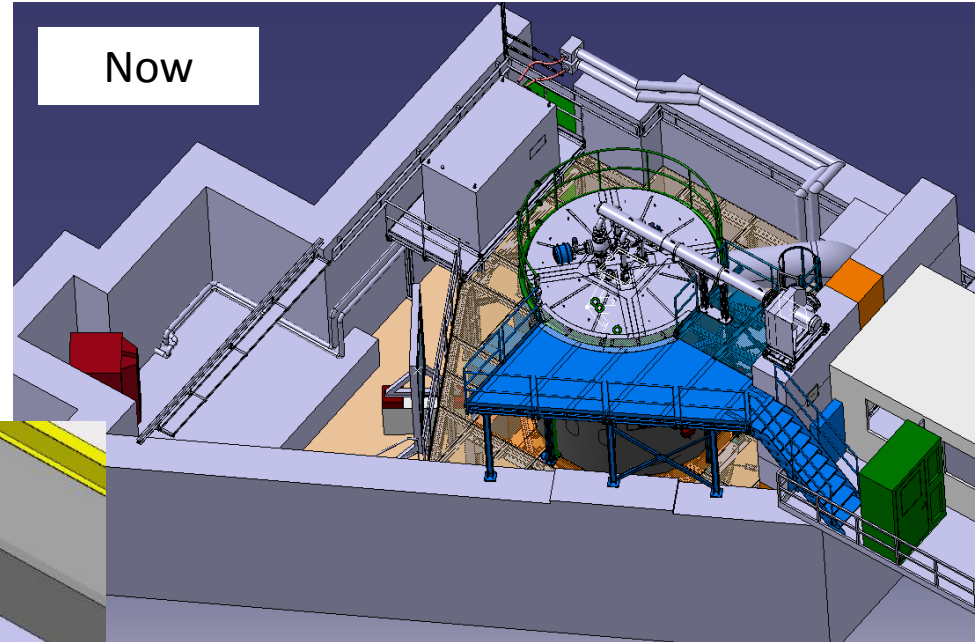
EP / DT contributions:

- Antti Onnela (0.35 FTE): CLOUD Project engineer, Safety officer and Resources coordinator.
- Robert Kristic (0.4 FTE): CLOUD Maintenance & Upgrades, Support of visiting scientific teams
- Albin Wasem, Louis-Philippe De Menezes, Patrick Carrie, Roberto Guida & DT Gas Team: Adapting and maintaining of CLOUD's gas systems.
- As of Oct 2016: Simone Schuchmann, fellow (in EP-SME): CLOUD Simulations
- As of Jan 2017: Hanna Manninen, fellow: CLOUD Run coordinator

CLOUD during LS2 (2019-2020)

Building 157 East Hall renovation project

- Managed by EN-EA group
- All beam-line magnets replaced.
- Control rooms replaced.
- CLOUD beam area enlarged – good!



- Design work on-going now, with EN-EA.
- Will require significant contributions from CERN CLOUD team, during LS2!
- Aim to have physics run (with cosmics, no beam) in 2019 and CLOUD area modifications in 2020

NA62

- We got the Higgs boson with the LHC, which completes the Standard Model (SM)
- However, we know our SM is incomplete !
- To look for ultra rare Kaon decays is one way to look for new physics



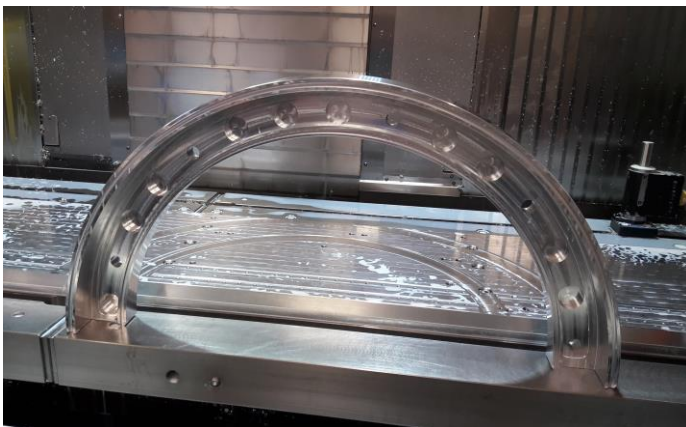
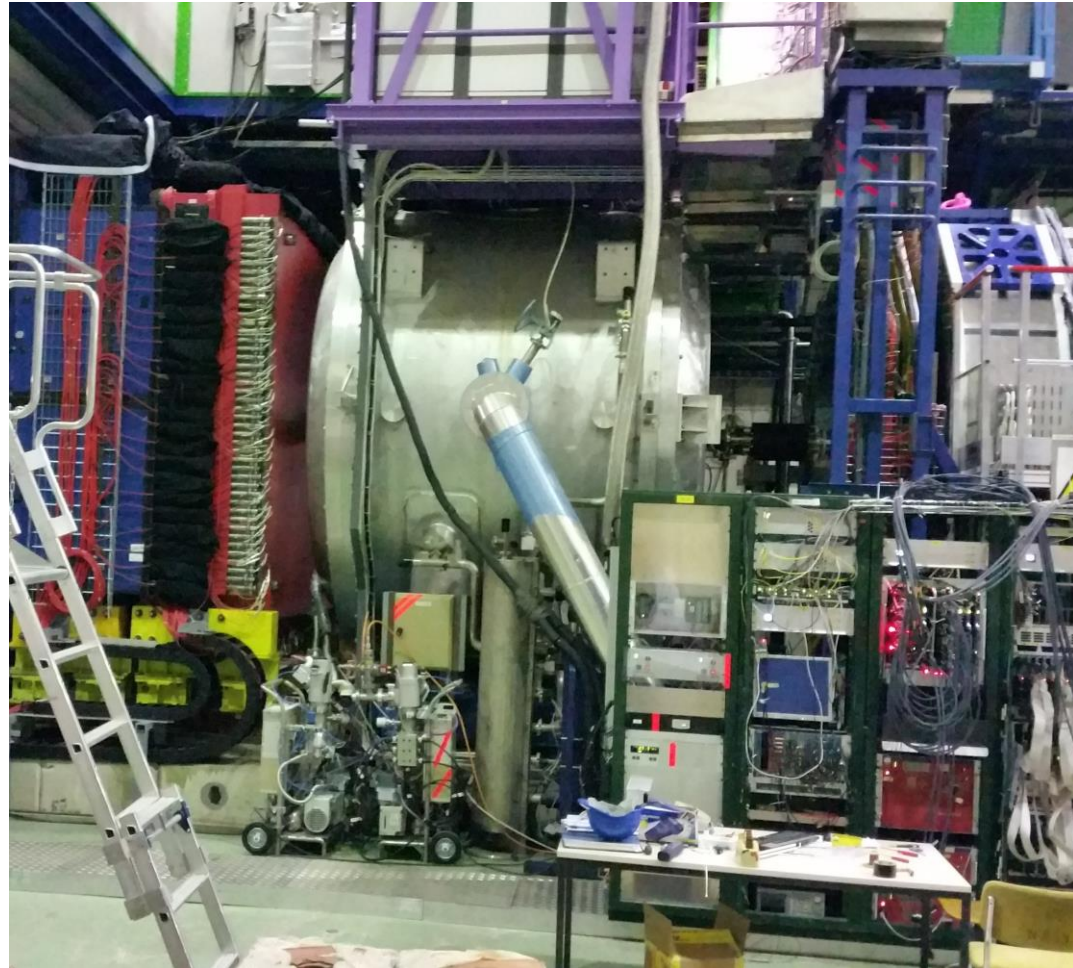
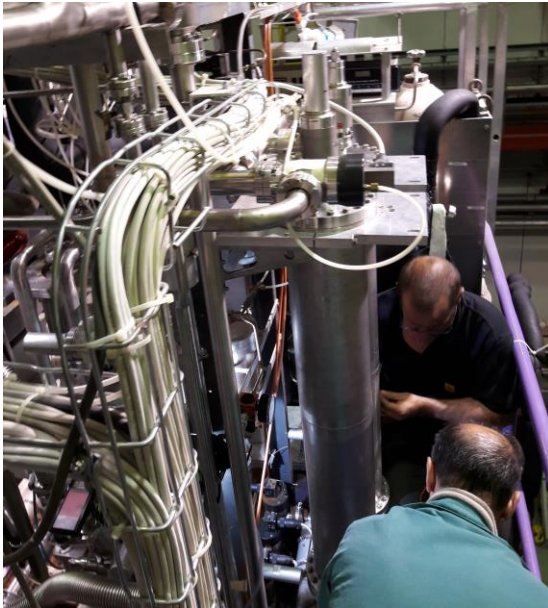
DT contributions to NA62

- Two new detectors:
 - The GigaTracker
 - The Straw Spectrometer
- Magnetic field measurement
- Safety
- The RICH vessel (completed)
- Gas systems (CEDAR, Straw, RICH)
- Data Acquisition System , DSS
- Technical Coordination
- FTE/y =3.1
- Sections: DT-EF, DT-CO, DT-DI, DT-FS & DT-DD
- Work Package:
 - <https://edms.cern.ch/document/1738693/1>



Krypton leak in the LKr

- Major leak discovered in the calorimeter in September 2016 and repaired in February 2017



Present status of NA62

- **The 2017 Run is well under way and tuning performance is ongoing!**
- **There are plans to extend the experiment after LS2 to also explore the “Invisibles” using the NA62 detector and ideas to go even further!**

CLIC project timeline and objectives



 Compact Linear Collider

2019 - 2020 Decisions

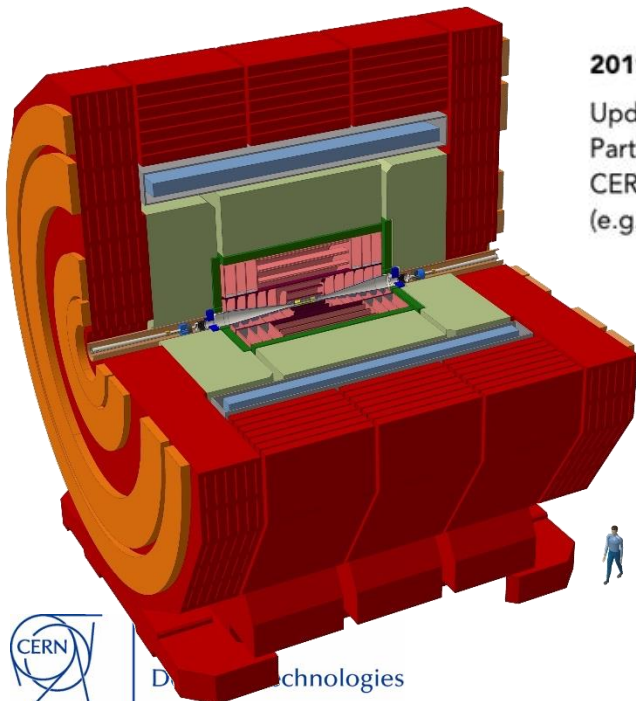
Update of the European Strategy for Particle Physics; decision towards a next CERN project at the energy frontier (e.g. CLIC, FCC)

2025 Construction Start

Ready for construction; start of excavations

2035 First Beams

Getting ready for data taking by the time the LHC programme reaches completion



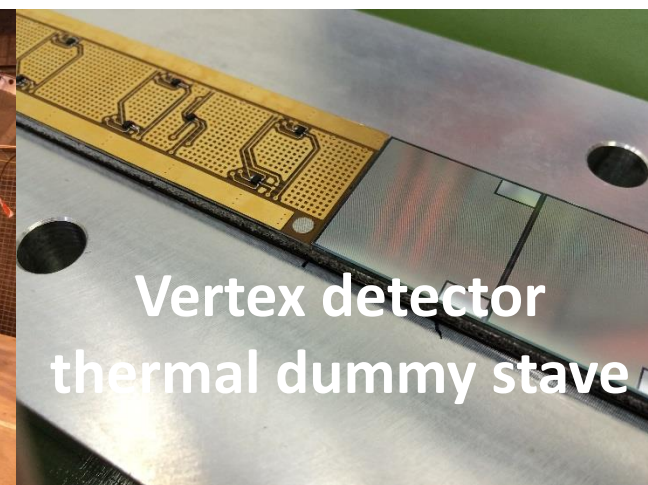
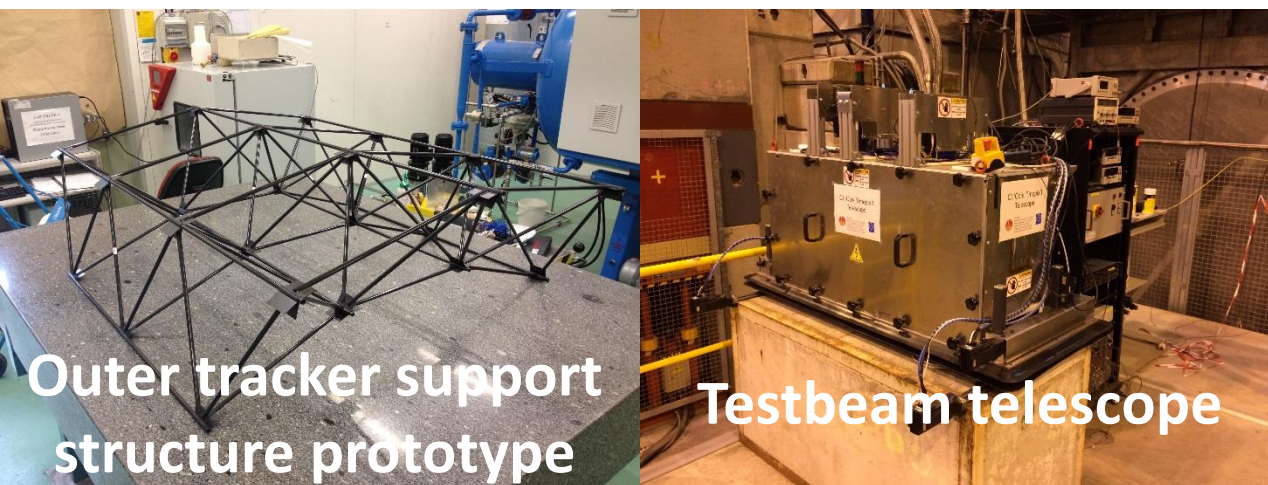
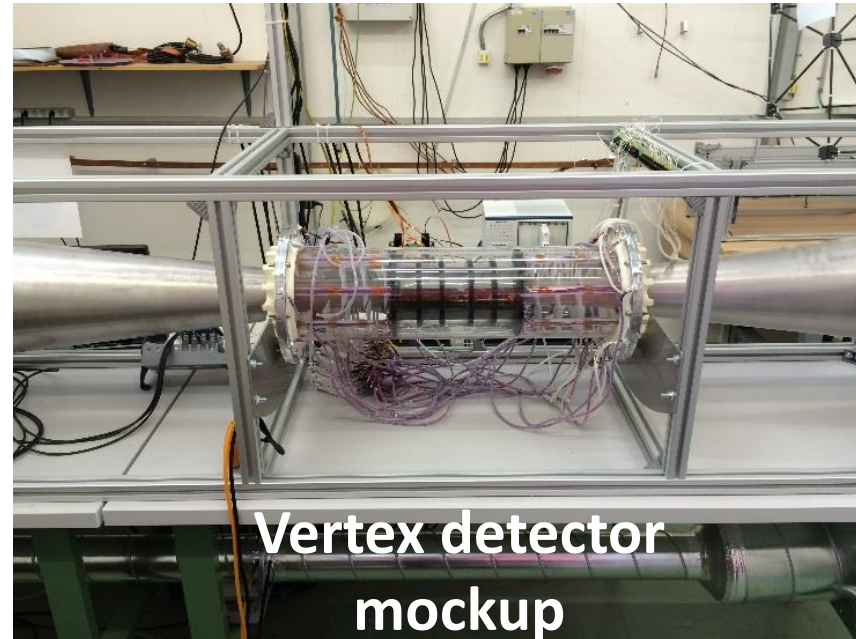
The CLICdp studies for the next European Strategy Update focus principally on:

- Studies of the CLIC physics potential;
- Detector optimisation studies driven by the physics aims;
- **Technology demonstrators** for the most challenging detector elements (the vertex detector, the silicon tracker and the fine-grained calorimetry).

DT contributions for the CLICdp study

- Air cooling feasibility studies for the vertex detector;
- Lightweight vertex and tracker support structures development;
- Vertex and tracker detectors testbeam infrastructure support.

EP/DT: Eva Sicking , Fernando Duarte Ramos



Air pollution control and decreasing new particle formation may lead to strong climate warming

30 OCTOBER 2009 VOL 326 SCIENCE www.sciencemag.org

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PERSPECTIVES

ATMOSPHERIC SCIENCE

Clean the Air, Heat the Planet?

Almut Arneth,^{1,2*} Nadine Unger,³ Markku Kulmala,² Meinrat O. Andreae⁴

Measures to control emissions of air pollutants may have unintended climatic consequences.

