

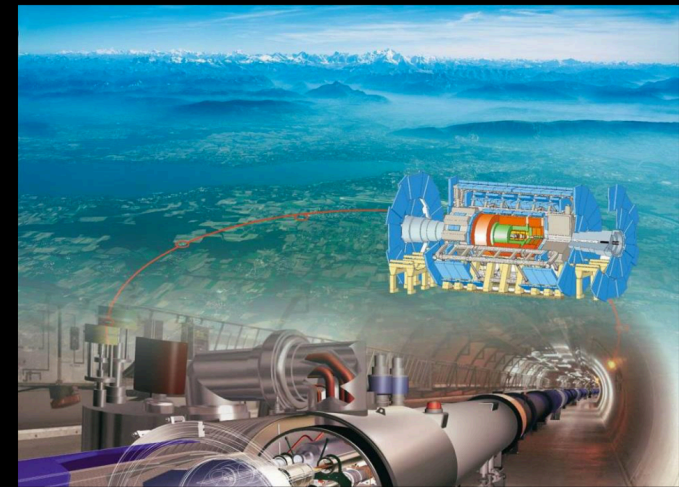


ATLAS Magnet System Status Q3-2018

Herman ten Kate

Content:

- 1 Magnets and Services***
- ~~***2 Operating Statistics 2018***~~
- ~~***3 Worries for 2018***~~
- ~~***4 Work 2019-2020 Long Shutdown 2***~~
- ~~***5 Conclusion***~~



ATLAS Week CERN, October 8, 2018

3 intro slides extracted from a talk: internal & too detailed content removed



1. Magnet System - Highlights



1 Barrel Toroid + 2 End Cap Toroids + 1 Central Solenoid
make ~ 1 T for the muon detectors and **2 T** for the inner detector

21 m diameter, 25 m long

8300 m³ filled with magnetic field

170 t superconductor

700 t cold mass

1320 t magnets

7000 t detector

20.4 kA@4.1T and 7.7 kA@2.2T

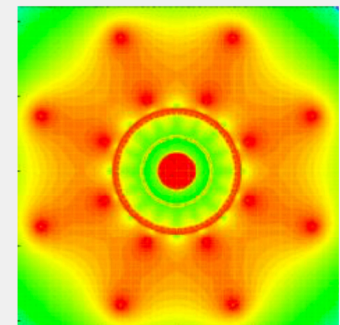
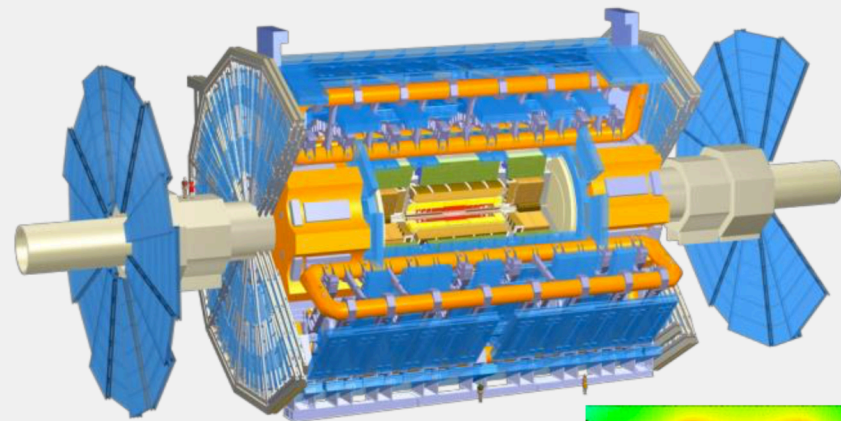
1.6 GJ stored energy

90 km superconductor, conduction cooled at **4.6 K**

9 years of construction 1998-2007

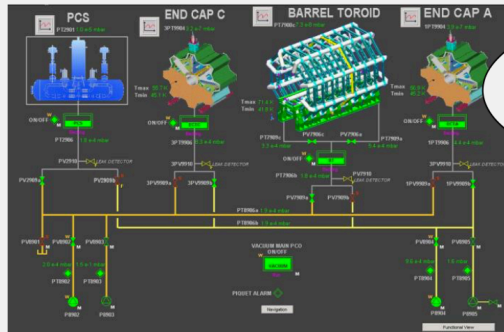
10 years of operation 2008-2018

World's largest superconducting magnet and **Back Bone of ATLAS**



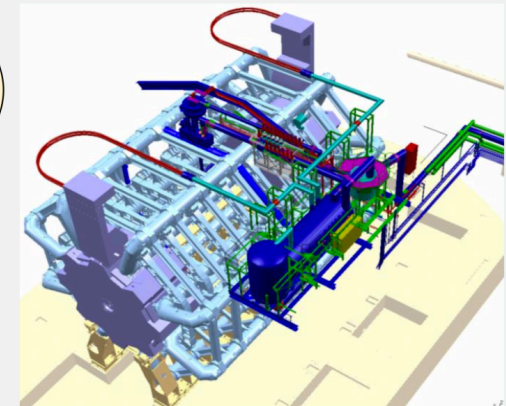


1. Magnet System - Essential Services



Vacuum
10^{-6} mbar in
800 m³ cryostats

Helium
30 kL stored &
circulated in cold
masses at 1.1 kg/s



Current
20400 A in Toroid
7730 A in Solenoid

Controls
Magnet Controls
Cryogenic Controls
Safety Systems



Acknowledgement

ATLAS magnets would not run so smoothly without these CERN service teams!

- EP/ADO - magnet operations management
- EP/DT - controls and safety systems
- TE/CRG - cryogenics
- TE/EPC - power converters
- TE/MSP - breaker maintenance
- TE/VAC - vacuum support
- EN/EL - mains
- EN/CV - cooling
- EN/MME - welding & machining
- JINR - man power

