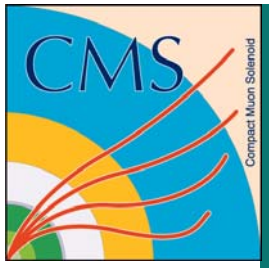
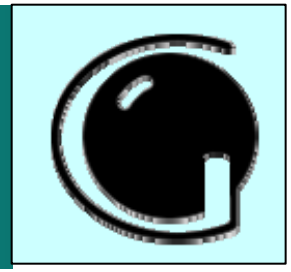


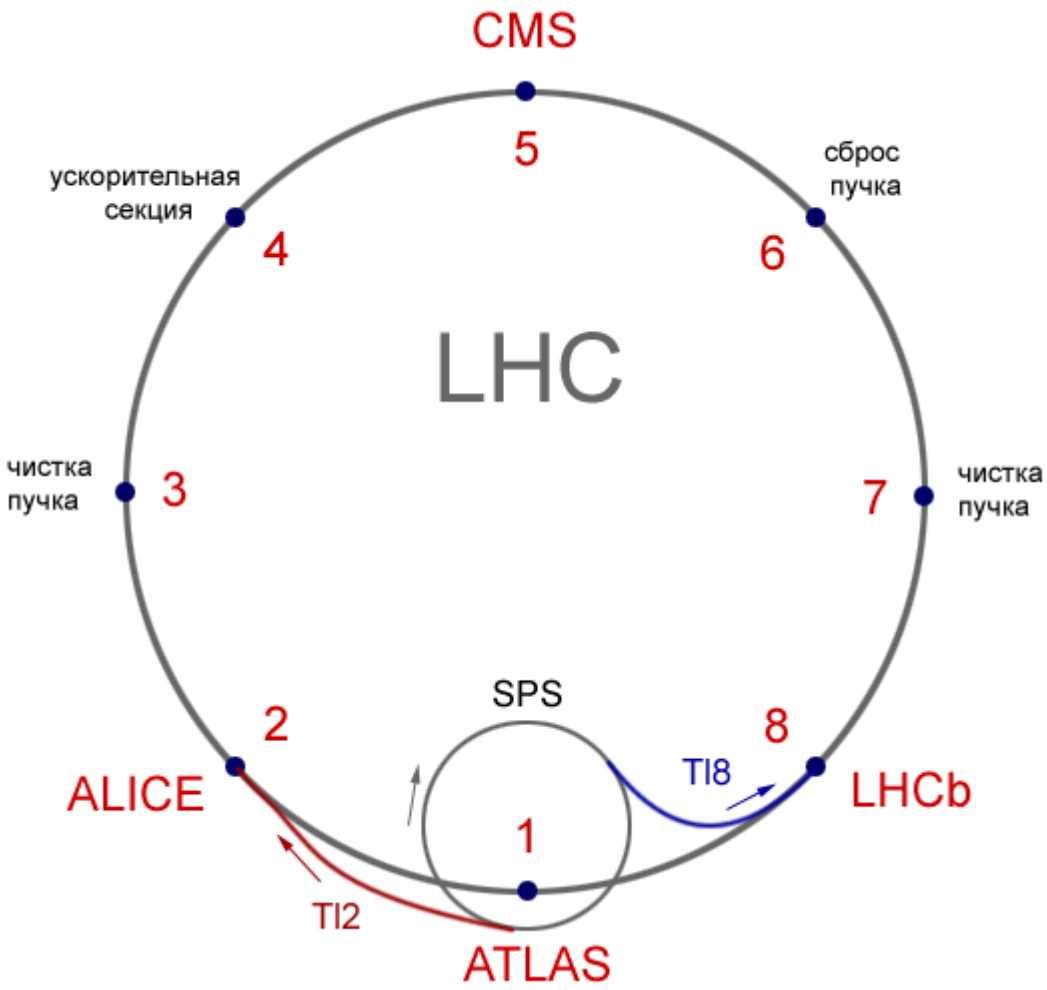
Сессия Ученого Совета ОФВЭ
25 декабря 2008



Проект CMS в 2008

В.В.Сулимов

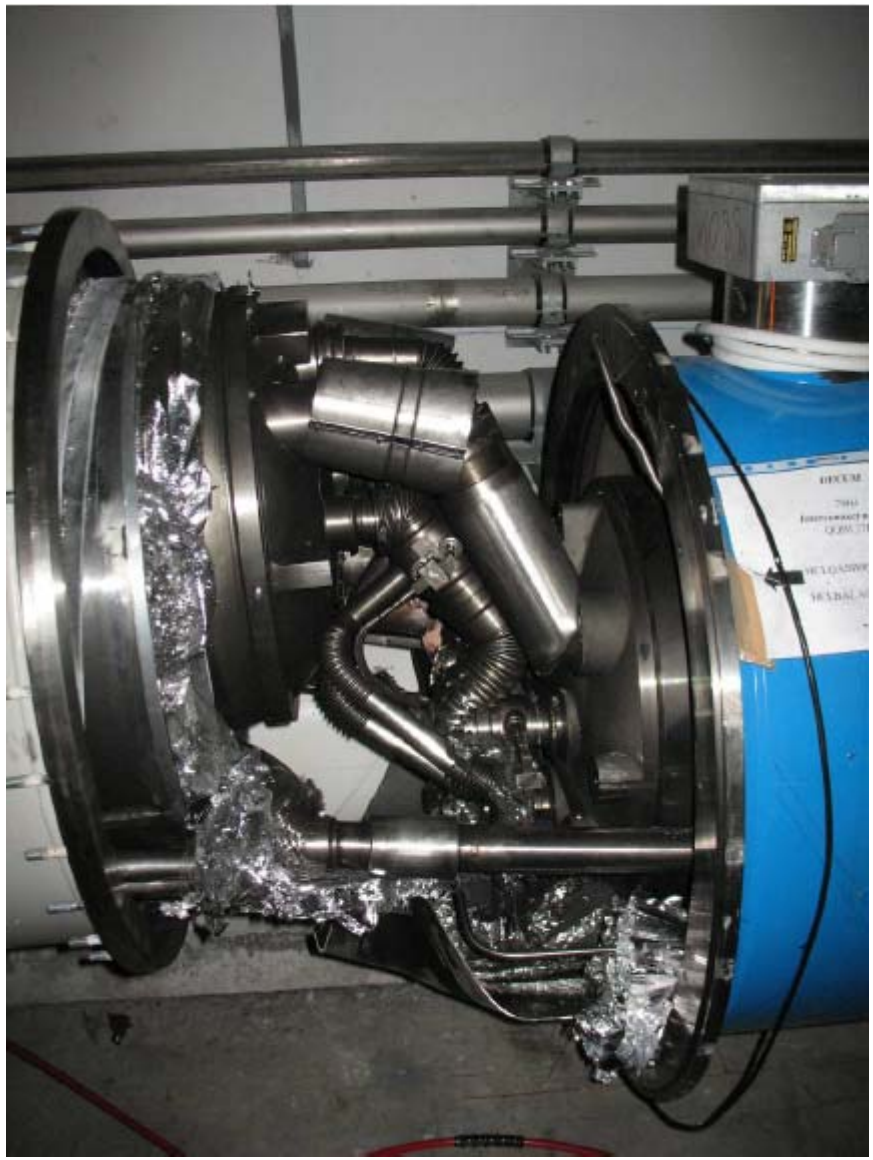
LHC


CMS
5
сброс
пучка
6
чистка
пучка
7
LHCb
8
TI8
SPS
1
ATLAS
TI2
2
ALICE
чистка
пучка
3
ускорительная
секция
4
LHC

LHC

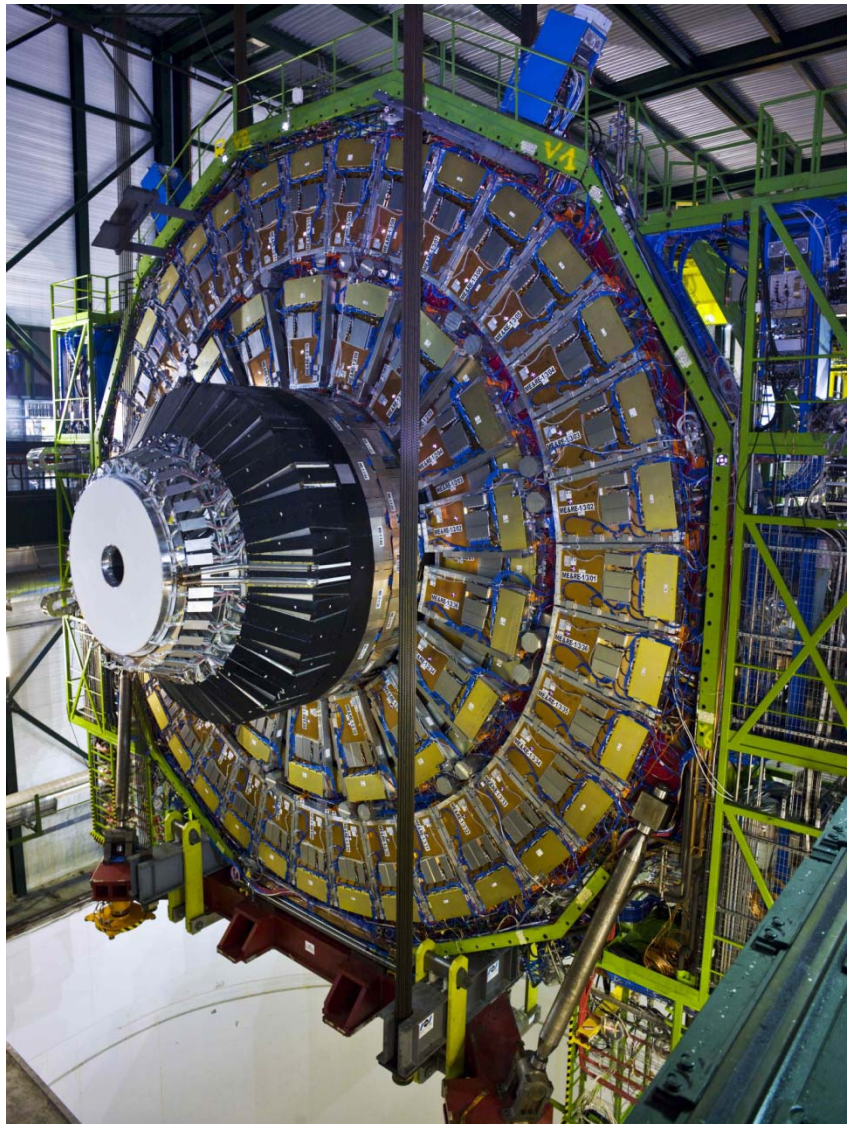

CERN
Inauguration du LHC
LHC Inauguration
CERN 21-10-2008
CERN

QQBI.27R3

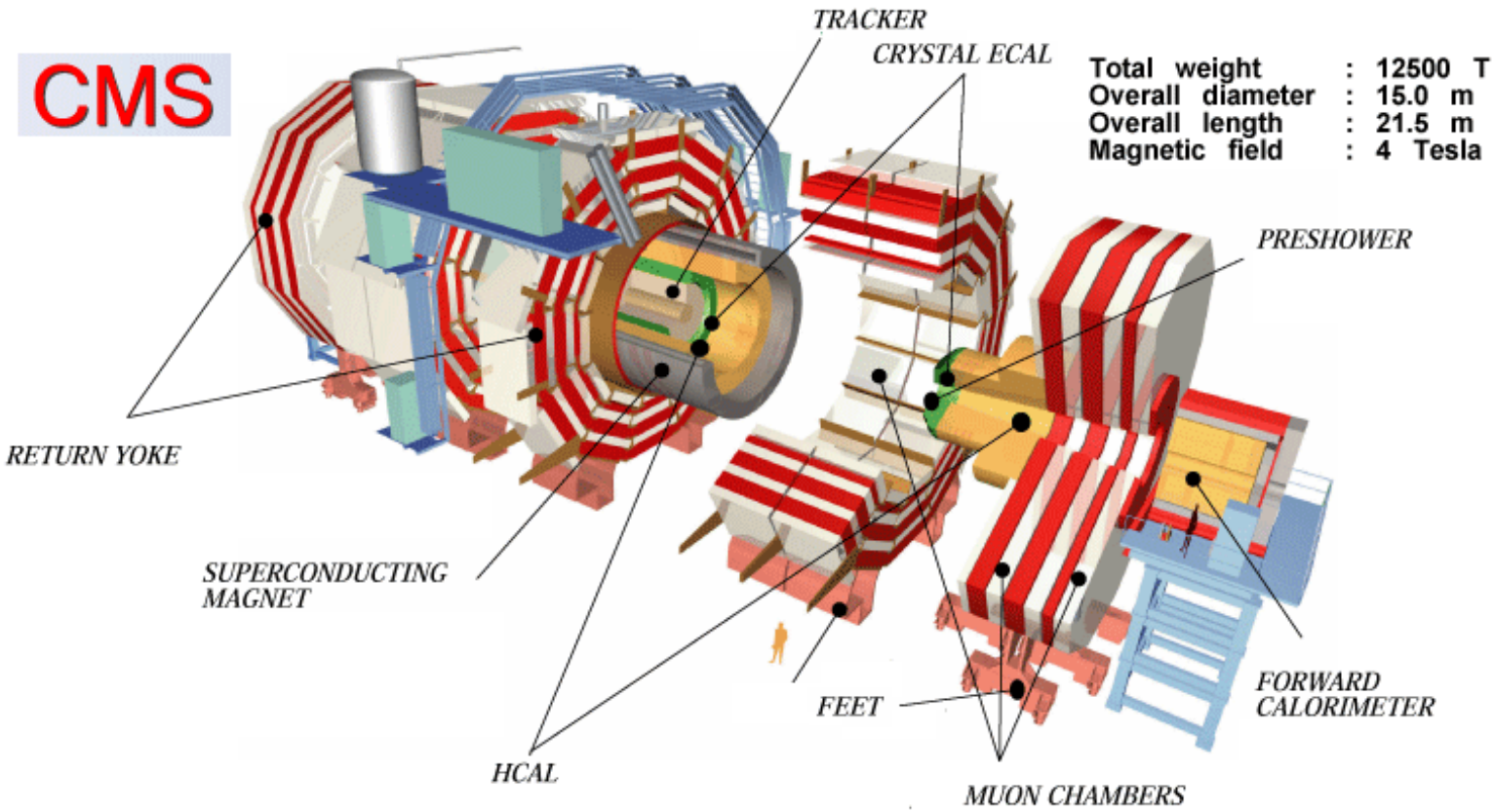


CMS

Last CMS Disk lowered into the underground cavern 22 Jan ‘08



CMS


CMS
TRACKER
CRYSTAL ECAL
Total weight : 12500 T
Overall diameter : 15.0 m
Overall length : 21.5 m
Magnetic field : 4 Tesla
PRESHOWER
RETURN YOKE
SUPERCONDUCTING MAGNET
FEET
FORWARD CALORIMETER
HCAL
MUON CHAMBERS

End-Cap Muon System

468 CSCs, not counting ME4/2

- **144 Large CSCs (3.4x1.5 m²):**

72 ME2/2 chambers
72 ME3/2 chambers

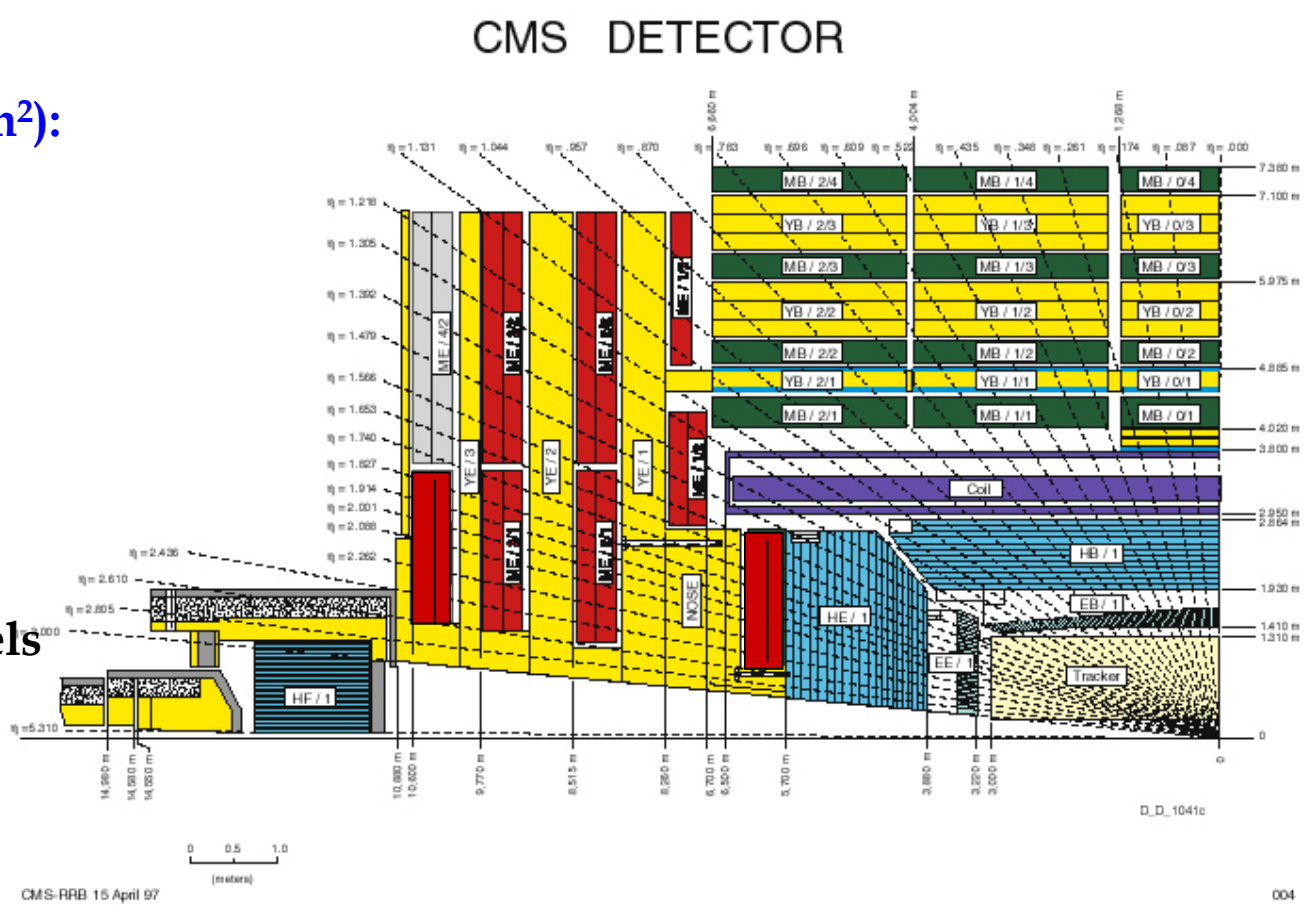
- **Small CSCs (1.8x1.1 m²):**

72 ME1/2 chambers
72 ME1/3 chambers
72 ME1/1 chambers

- **20º CSCs (1.9x1.5 m²):**

36 ME2/1 chambers
36 ME3/1 chambers
36 ME4/1 chambers

- **Frontend Electronics:**
- 170K Cathode channels
  140K Anode channels
- **Trigger&DAQ**
  (on-chamber part)
- **Alignment&Services**



TEN MYTHS ABOUT RUSSIA

JAPAN: HOT GREEN CARS

Newsweek

The Biggest Experiment Ever
(And It's European)

The new CERN collider in Geneva

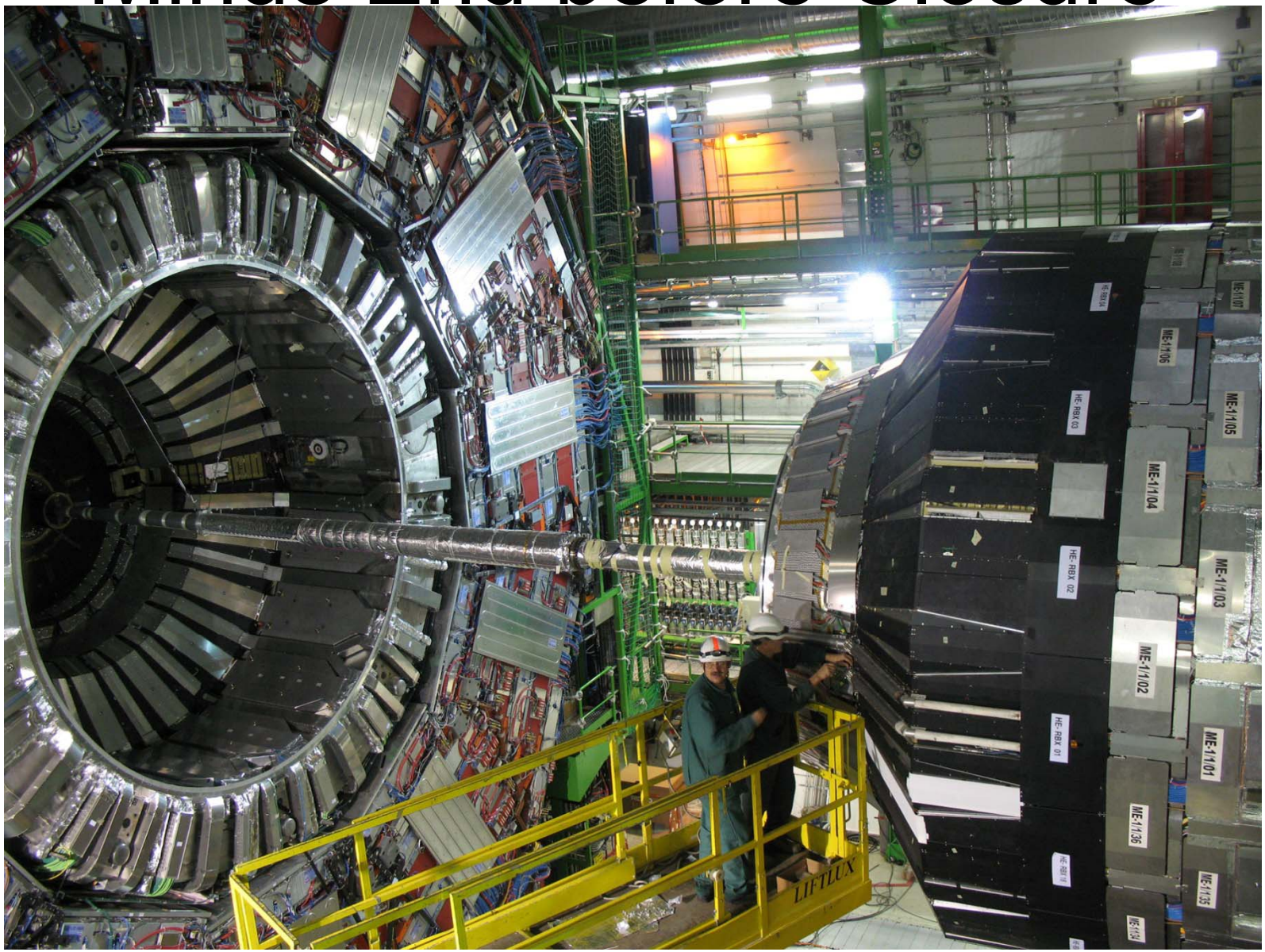
PHOTOGRAPH BY MARTIAL TREZZINI—AP

newsweek.com SEPTEMBER 15, 2008

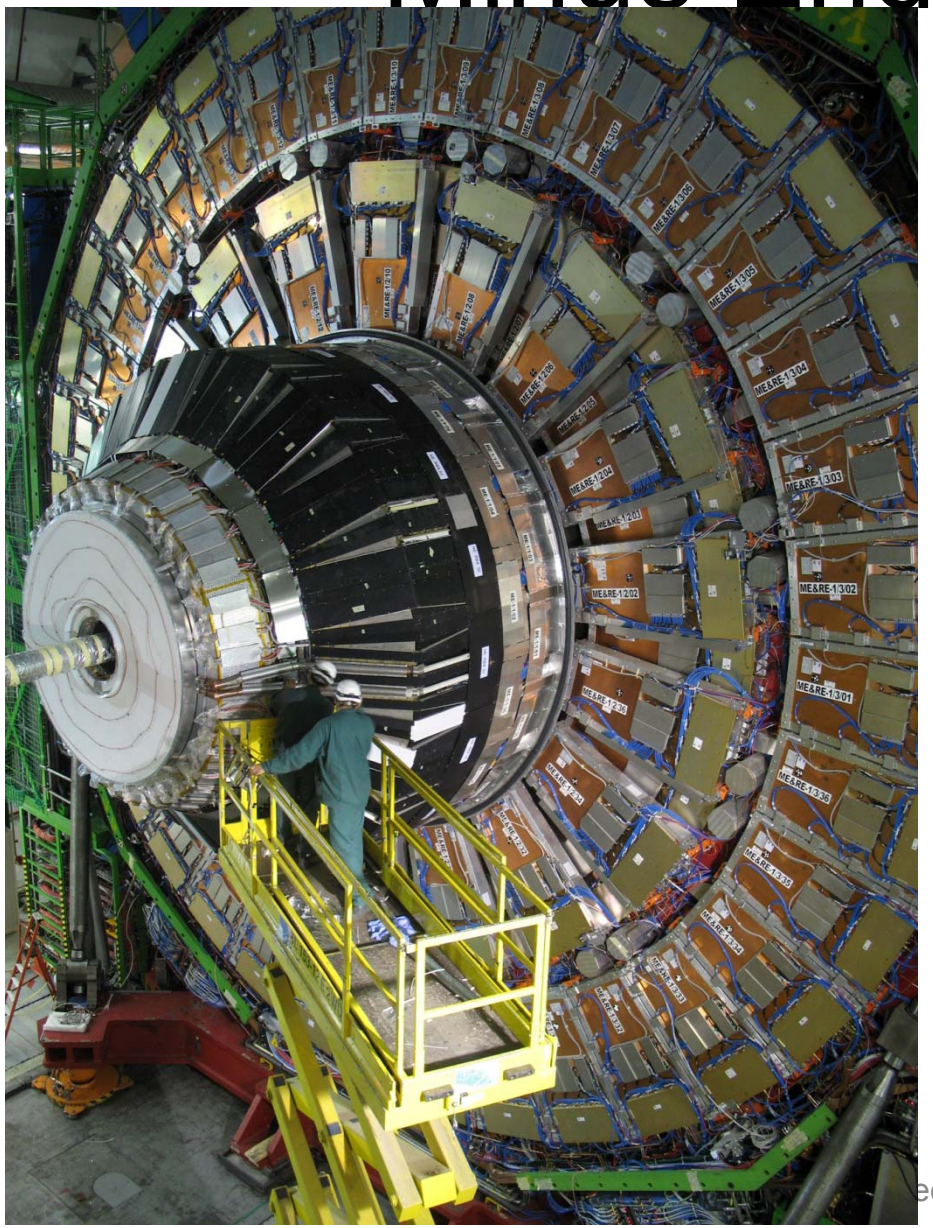
9 770163 705128 37

Albania	Lek 600	Finland	€4.40	Israel	NIS 20.00	Netherlands	€4.40	Slovenia	€3.40
Austria	€4.40	France	€4.40	Italy	€4.40	Norway	Kr 41.00	Spain	€4.40
Belgium	€4.40	Germany	€4.40	Kazakhstan	$4.40	Poland (incl.tax)	PLN 12.30	Sweden	SKr 34.00
Bulgaria	BGL 4.50	Gibraltar	£2.90	Latvia	$4.40	Portugal Cont	€4.40	Switzerland	SF 7.70
Croatia	KN 22.00	Greece	€4.40	Lithuania	$4.40	Romania	Lei 11.00	Turkey	YTL 4.00
Cyprus	c£2.58/€4.40	Hungary	Ft. 700.00	Luxembourg	€4.40	Russia	$4.40	Ukraine	$4.40
Czech Republic	CZK 115.00	Iceland	IKR 390.00	Malta	Lm 1.70/€3.96	Serbia	DIN 240	United Kingdom	£2.80
Denmark	Kr 38.00	Ireland (incl tax)	€4.40	Montenegro	DIN 240	Slovakia	SK 120.00/€3.98	U.S. Forces	$3.25

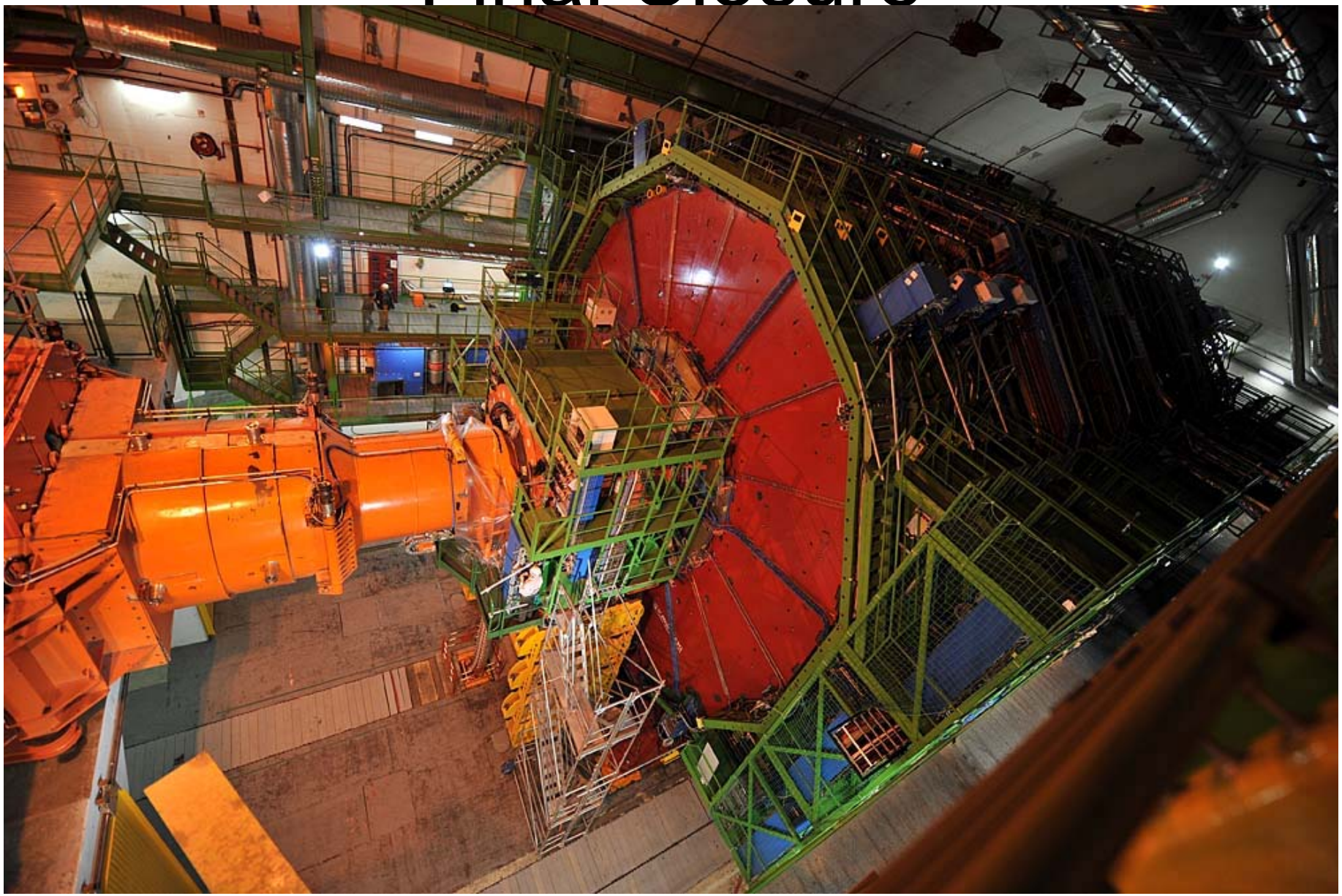
Minus End before Closure

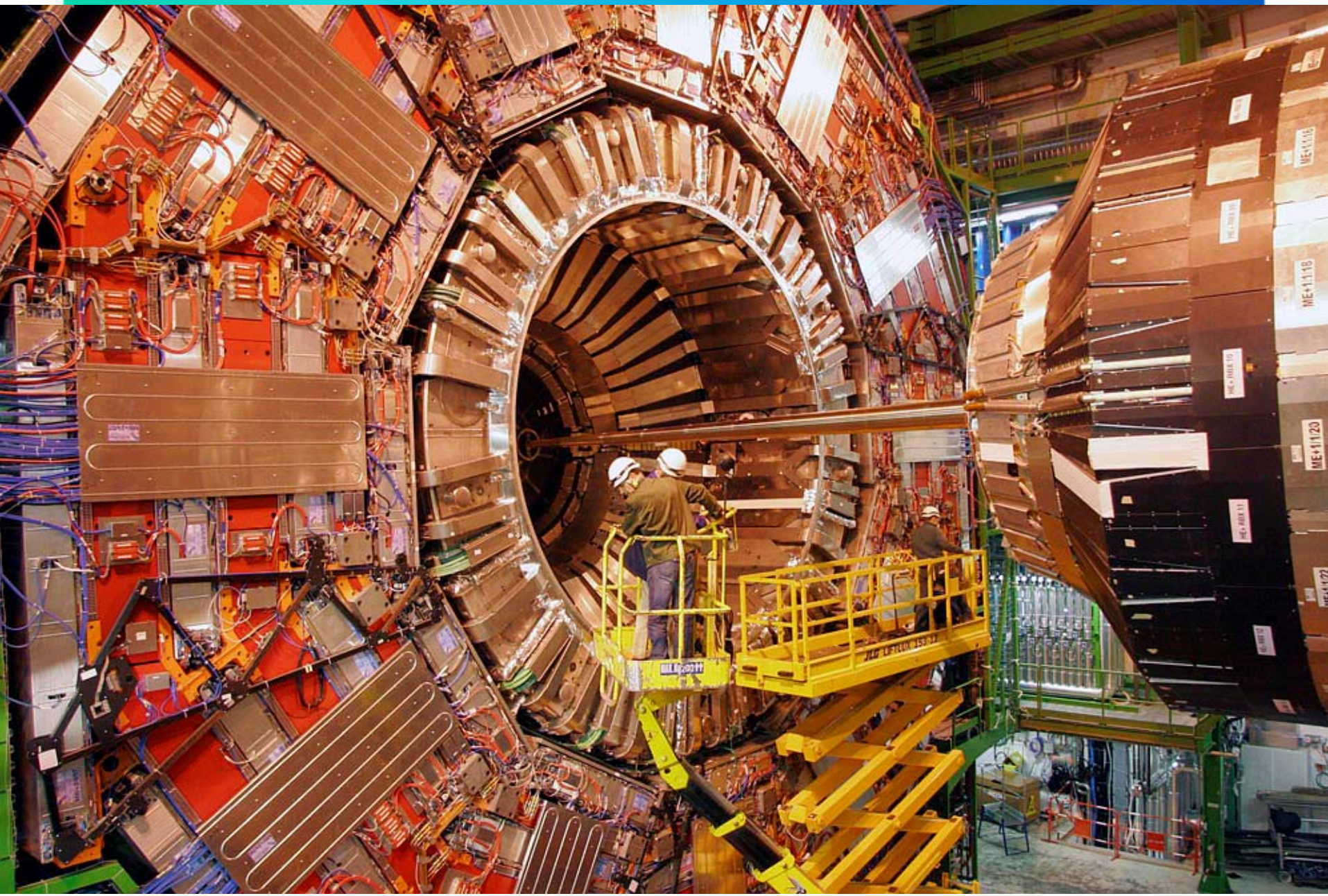


Minus End & Closure



Final Closure




ME+1/1/18
ME+1/1/20

CMS TF Потоки Данных

1

AFE - карты

ALCT - модули

468 Chambers, On-detector Electronics

30 cathode bytes /BX/chamber

7 anode bytes /BX/chamber

30 cathode bytes /BX/chamber

7 anode bytes /BX/chamber

TMB- модули

MPC- модуль

1

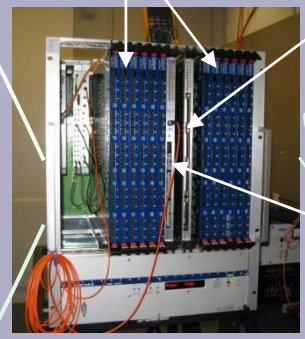
60 Peripheral Crate

12 bytes /BX/sector

12 bytes /BX/sector

SP05- модули

MS- модуль



16 bytes /BX/CSC

TTC- модуль

1

Track Finder Crate

Global Muon Trigger

700 GByte/s

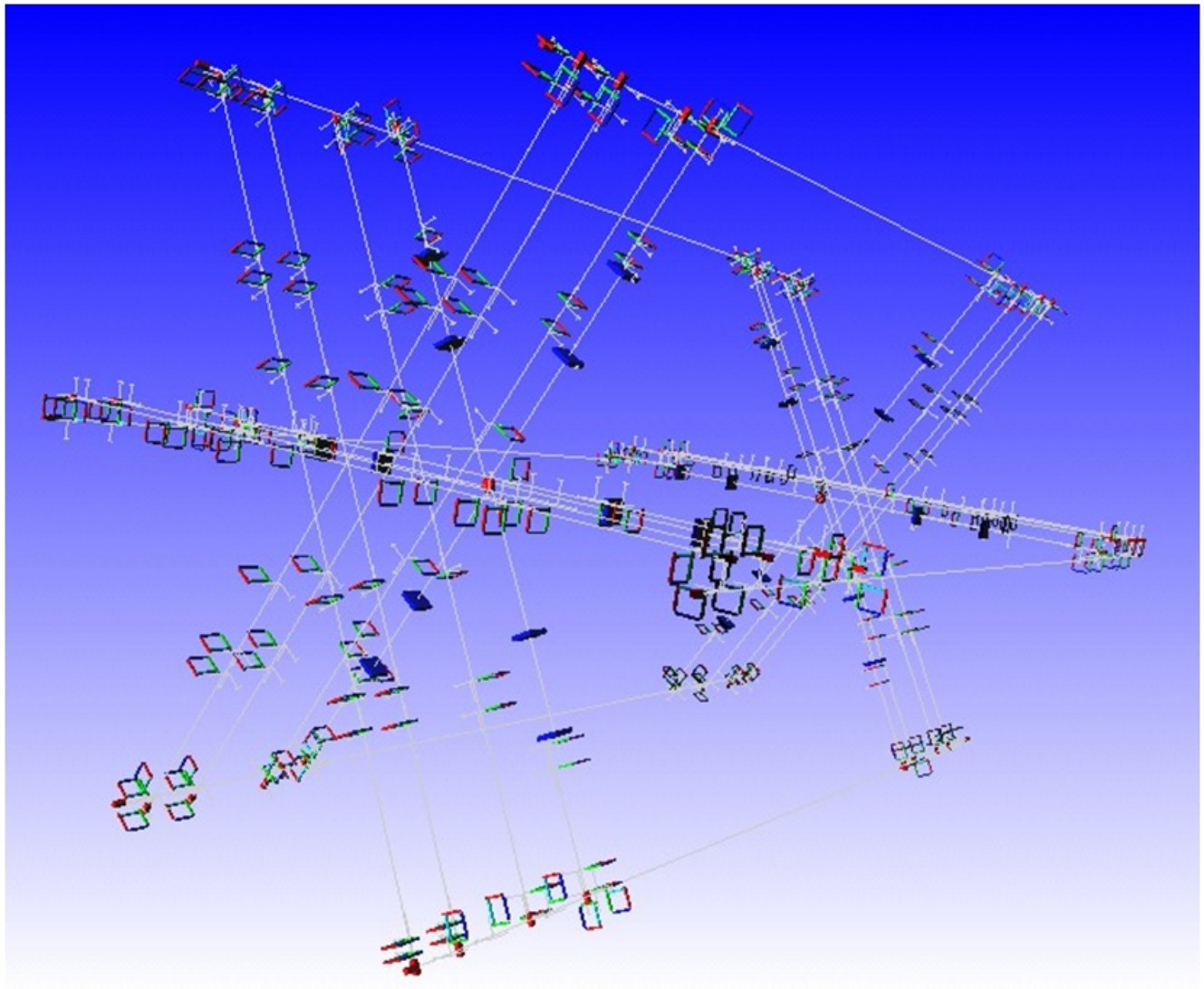
30 Gbyte/s

640 Mbyte/s

FQPFMP

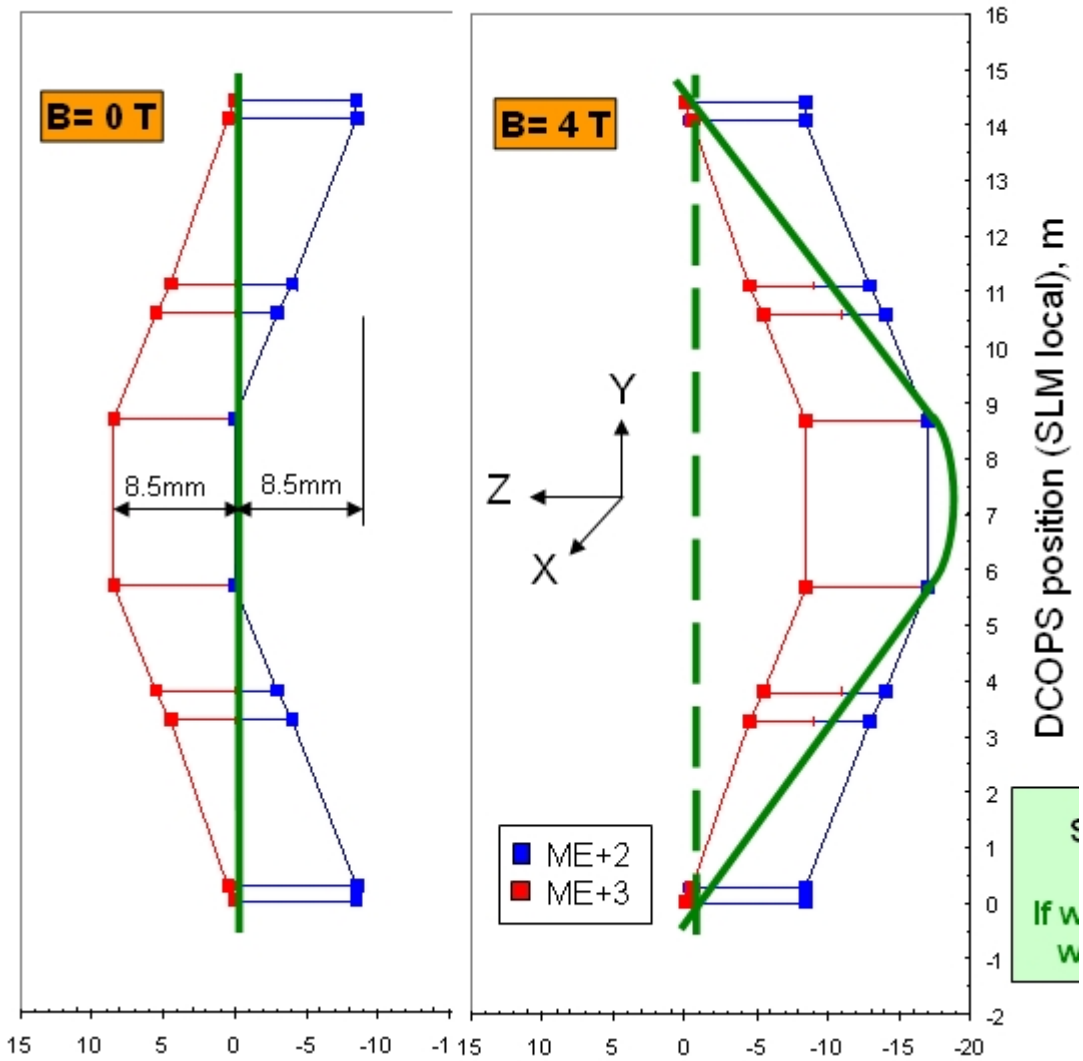
HV system

Alignment

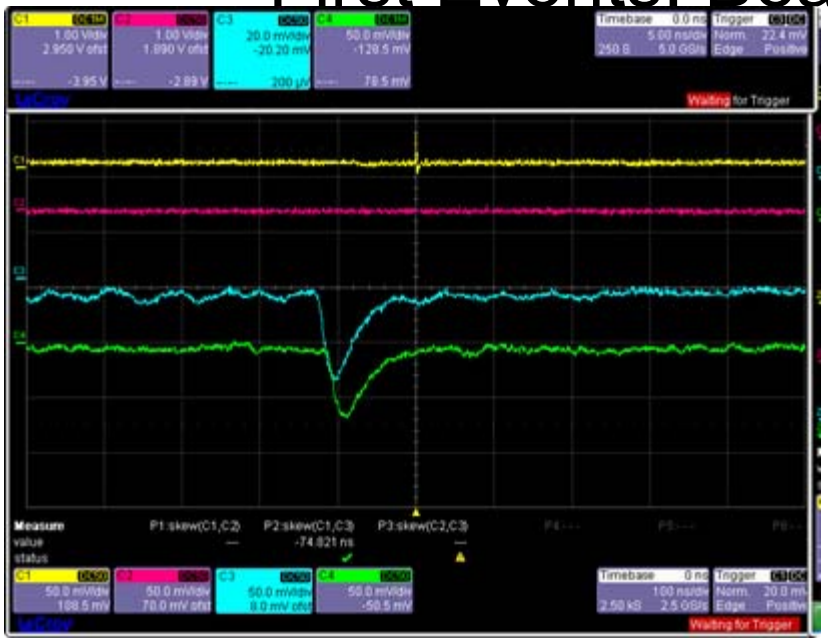


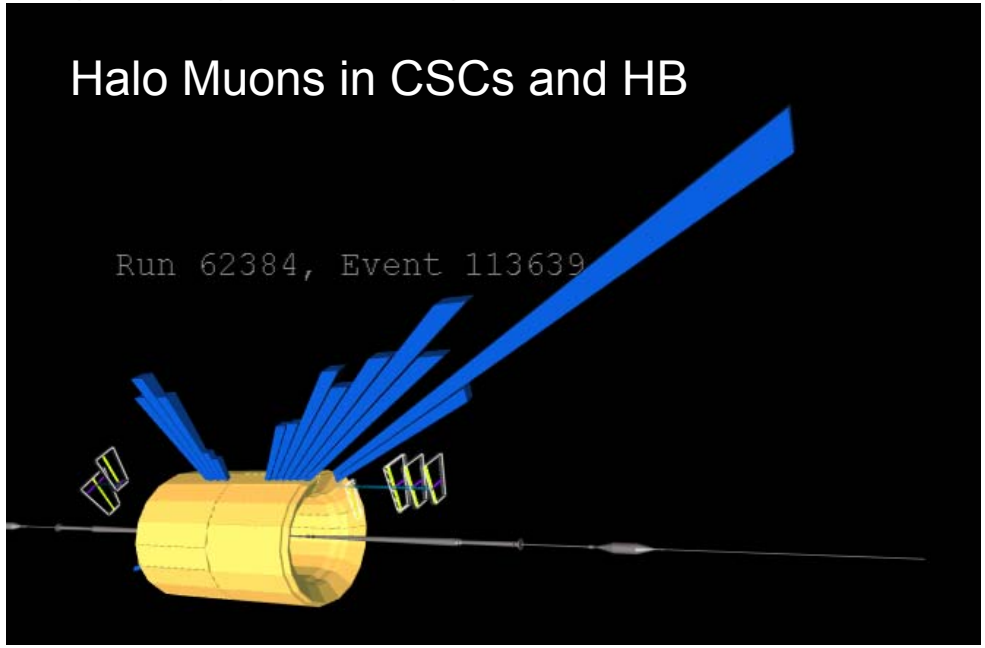
Alignment

Schematic view of DCOPS layout relative to the disk surface



First Events: Beam going through CMS



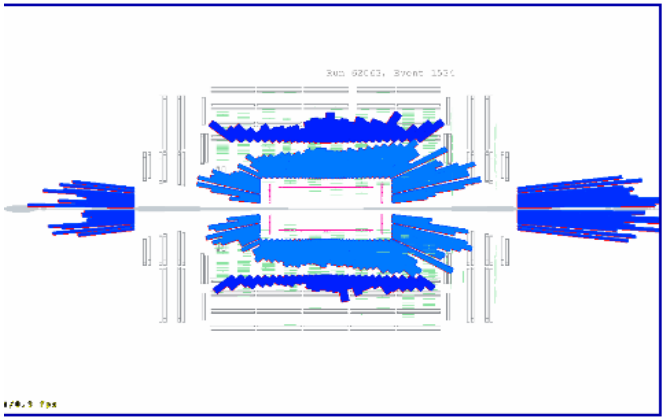


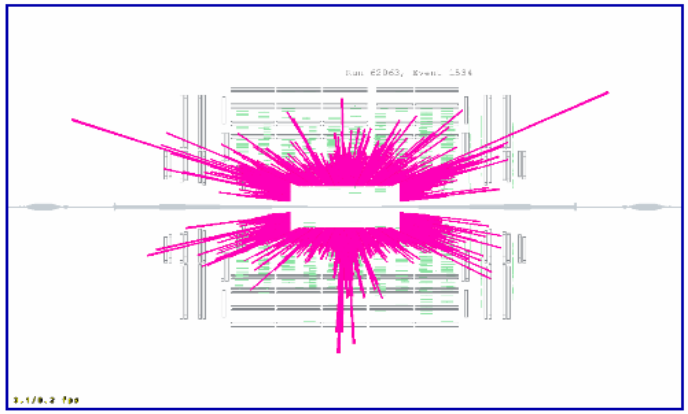
Beam Pickup (ch1) CMS Beam Condition Monitors (ch 3, 4)

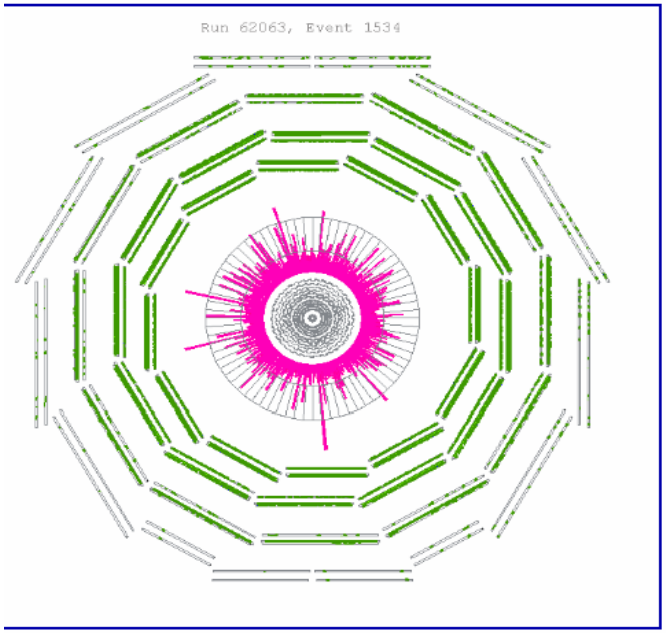
First Events: Collimators Closed

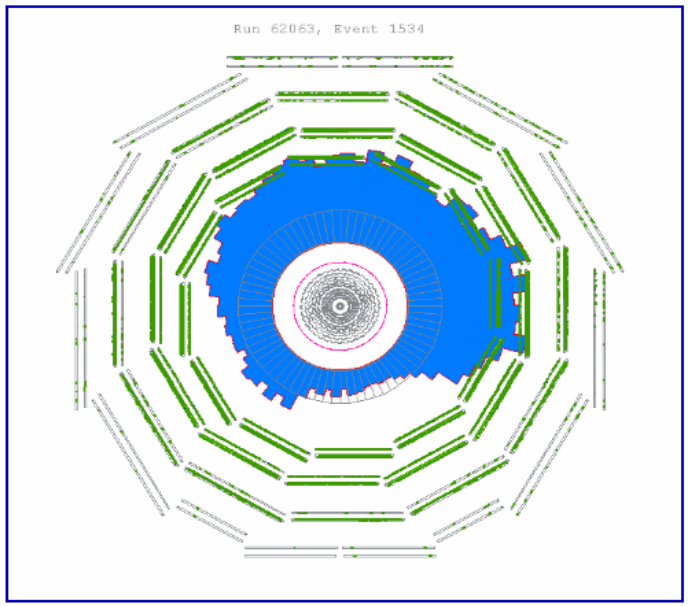
~2.10^9 protons on collimator ~150 m upstream of CMS

ECAL- pink; HB,HE - light blue; HO,HF - dark blue; Muon DT - green; Tracker Off









In the Beginning…

Summer ‘06 ..... Autumn ‘08

MTCC Commissioning CRUZET BEAM! CRAFT

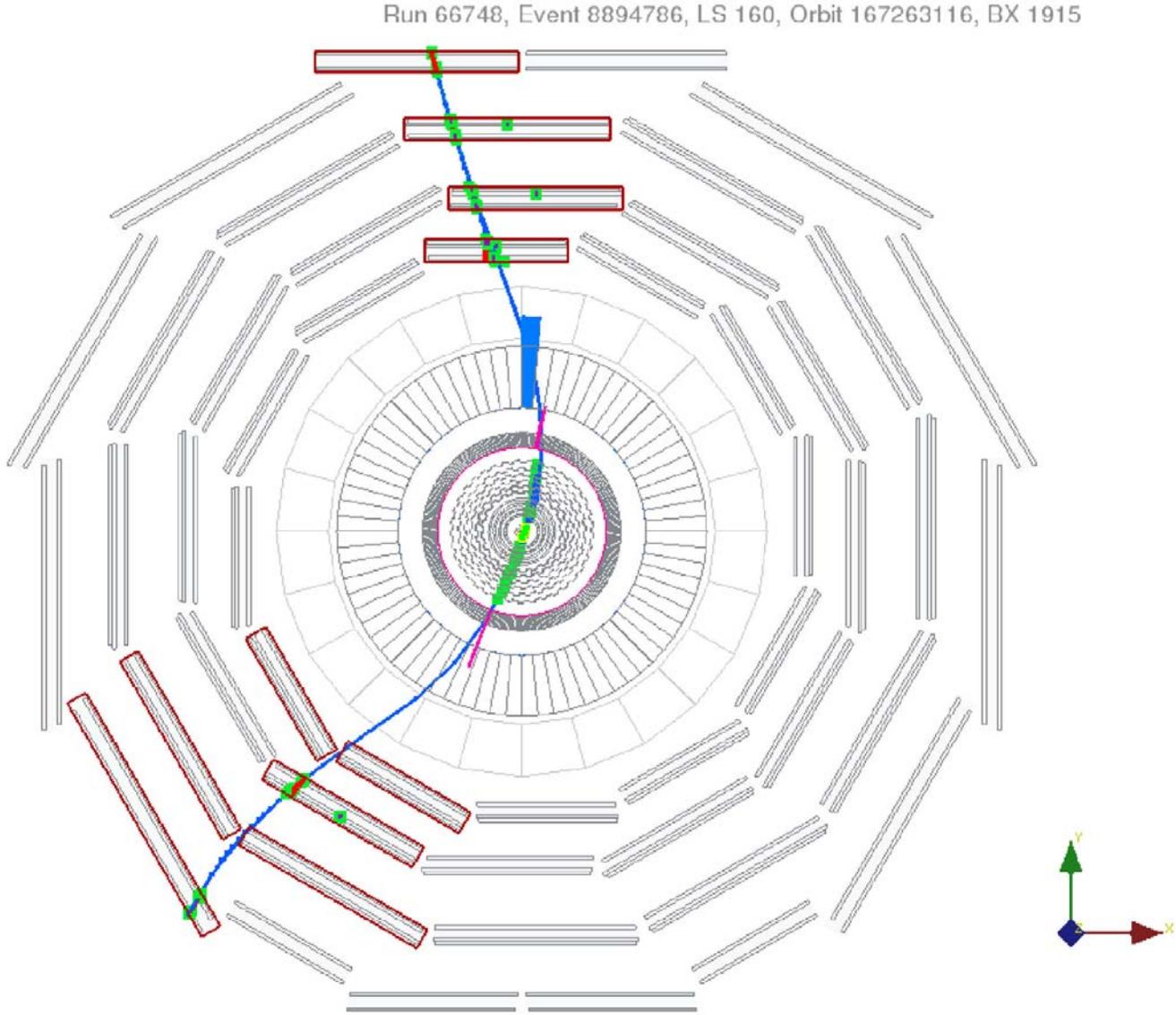
“Magnet Test Cosmic Commissioning”
Above-ground
Magnet at 4T
Single trigger sector

Moved underground
Magnet off
Scale up to full detector operation

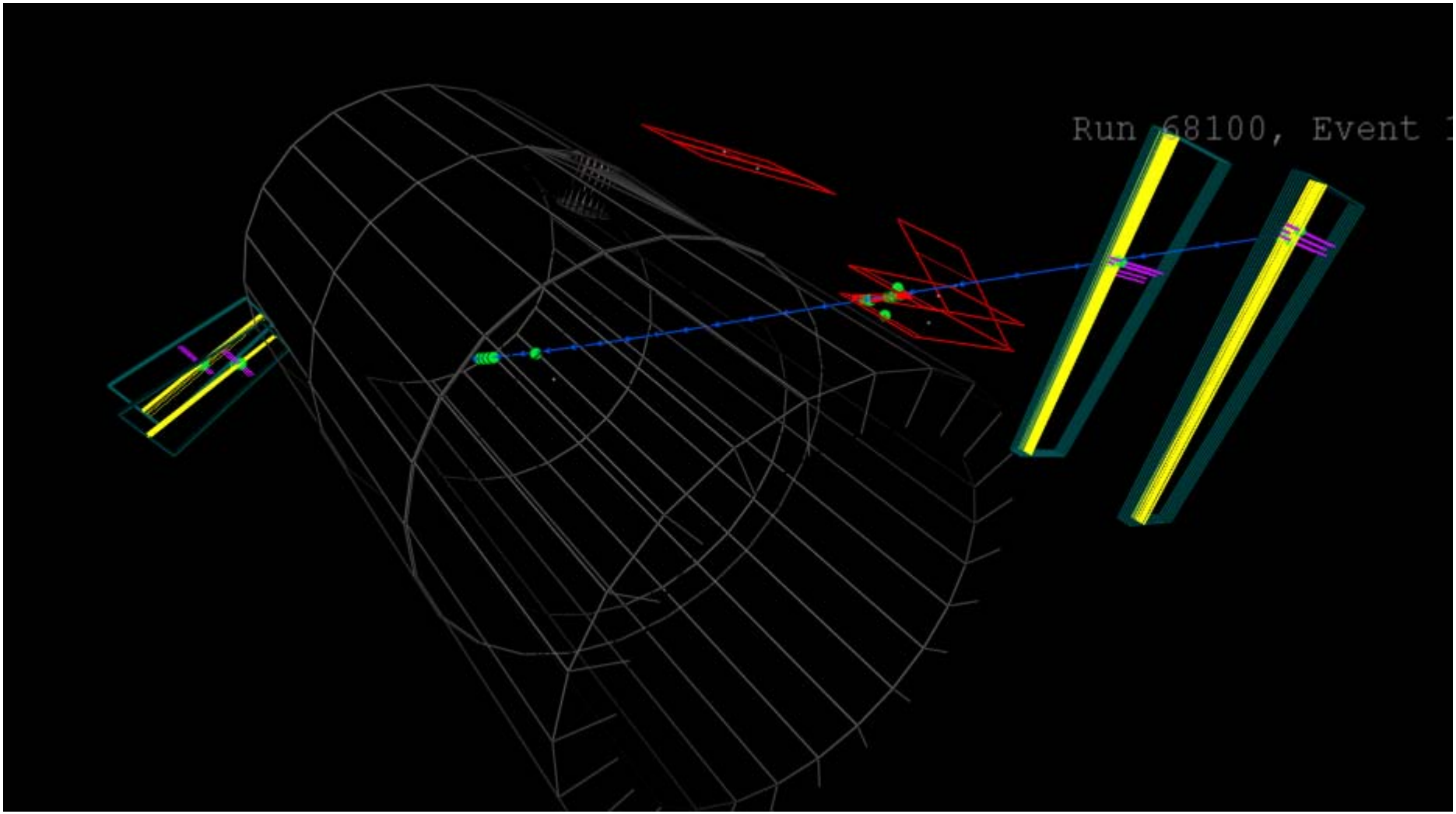
“Cosmic RUn at ZEro Tesla”
Magnet off
Full detector

“Cosmic Run At Four Tesla”
Magnet at 4T
Full detector

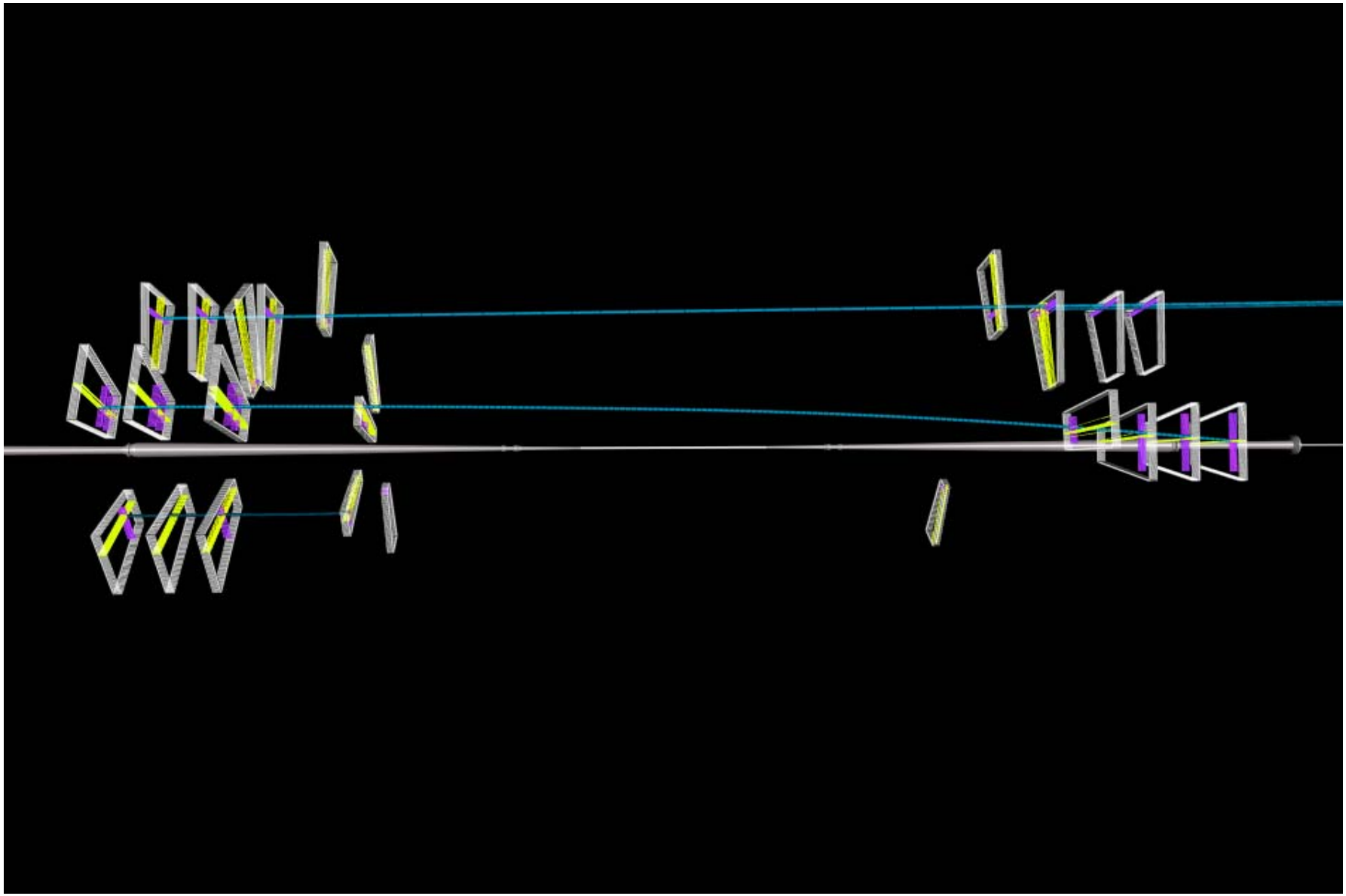
LHC

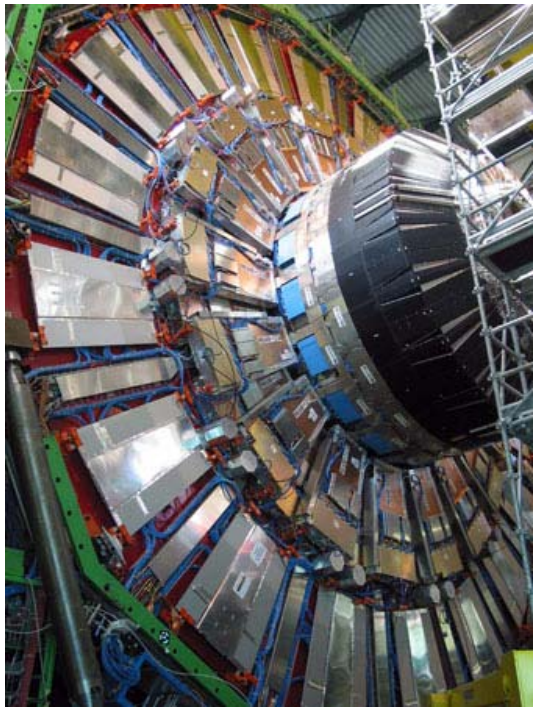


IGUANA (CRAFT)



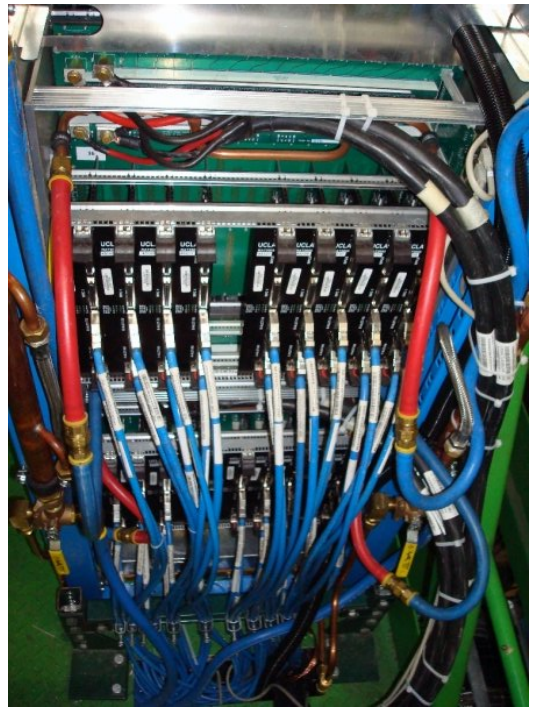
IGUANA (Beam Halo)





Infrastructure

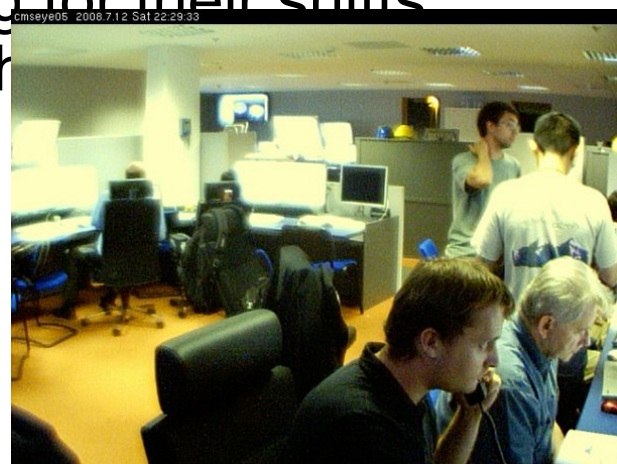
- Voltage
- Cooling
- Gas
- Cabling



- **All of this had to be in place before we could even begin commissioning…**
- **Without this, there is no experiment!**

CSC Shifts:
The People Behind the Data

- CSCs began official, institution-based shifts on 1 September 2008
- Each subdetector manages its own shifts
- CSC shifts organization:
  - 3 time slots (day/swing/owl)
  - 2 people per shift
  - Institutions assigned a shift slot for **7 days**
  - Shifters are responsible for preparing for their shifts by shadowing the previous week's sh



Winter Shutdown 2008-9

Estimated time-window: 1 Dec 2008 to 1 May 2009.
Aim to close CMS in early April (?) and perform cosmic runs at 3.8T

Known activities: Open detector
Repair of any major fault found during 2008 run