



Сессия Ученого Совета ОФВЭ, 29 декабря 2005

Проект CMS в 2005

Ю.М.Иванов



ПИЯФ в CMS

В проект вовлечены

Лаборатория физики элементарных частиц ОФВЭ

Лаборатория мезоатомов ОФВЭ

Группа экзотических ядер ОФВЭ

Отдел мюонных камер ОФВЭ

Отдел радиоэлектроники ОФВЭ

Отдел вычислительных систем ОФВЭ



Направления работы в 2005

Тестирование мюонных камер в CERN (ISR, SX5)

Сборка Торцевой Мюонной Системы в CERN (SX5)

Тестирование электроники (ISR, bld. 904)

Участие в работе физической группы RDMS



End-Cap Muon System

468 CSCs, not counting ME4/2

- 144 Large CSCs ($3.4 \times 1.5 \text{ m}^2$):

 - 72 ME2/2 chambers

 - 72 ME3/2 chambers

- Small CSCs ($1.8 \times 1.1 \text{ m}^2$):

 - 72 ME1/2 chambers

 - 72 ME1/3 chambers

 - 72 ME1/1 chambers

- 20° CSCs ($1.9 \times 1.5 \text{ m}^2$):

 - 36 ME2/1 chambers

 - 36 ME3/1 chambers

 - 36 ME4/1 chambers

- Frontend Electronics:

 - 170K Cathode channels

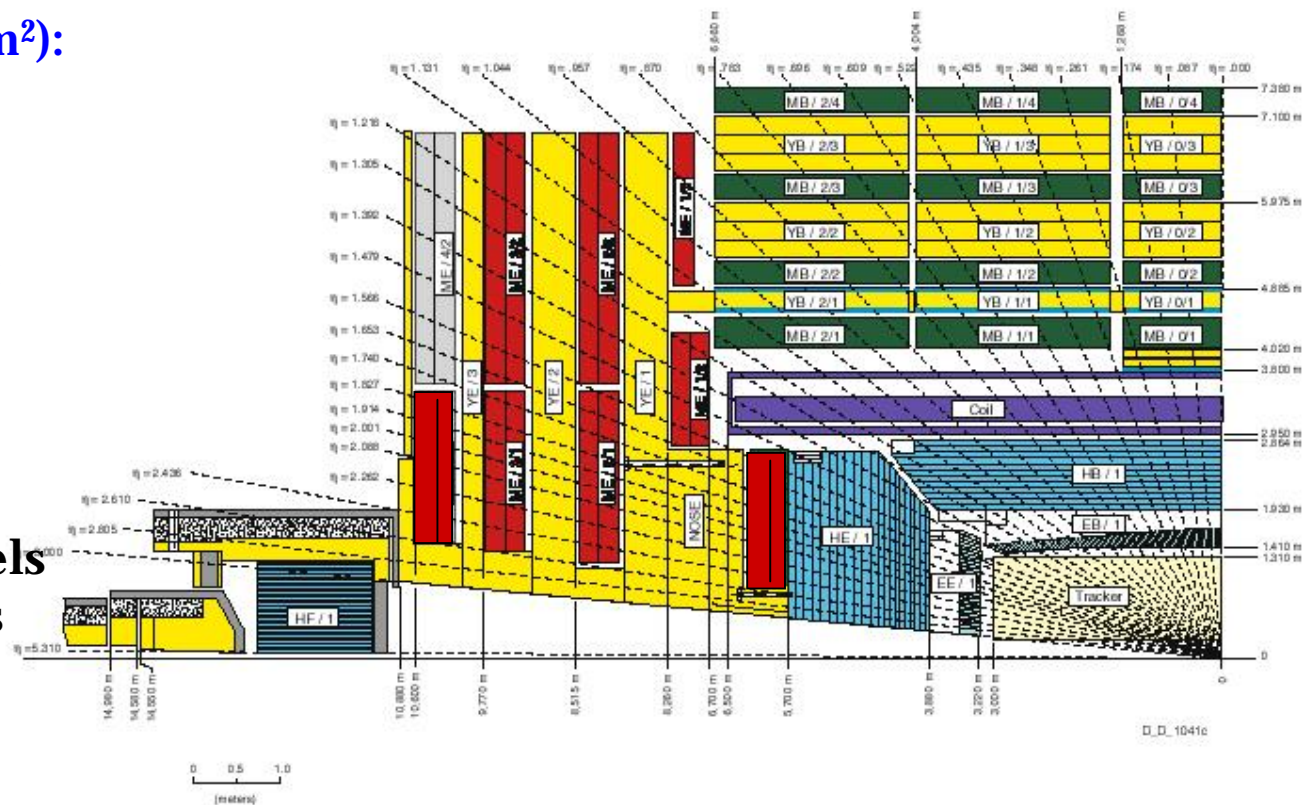
 - 140K Anode channels

- Trigger&DAQ

 - (on-chamber part)

- Alignment&Services

CMS DETECTOR



CMS-RRB 15 April 97

004



CSC production

CSC production is finished
All CSCs are at CERN

CSC type	Built	FAST site	CERN
• ME23/2 (US)	150/144	149	149
• ME2/1 (PNPI)	40/36	38	40
• ME3/1 (PNPI)	40/36	38	40
• ME4/1 (PNPI)	40/36	38	40
• ME1/1 (Dubna)	76/72	76	76
• ME1/2 (Beijing)	75/72	74	75
• ME1/3 (Beijing)	75/72	74	75
• totals	496/468	487/468	495/468
•	(106%)	(104%)	(106%)



EMU Project Status, November 2005

- | | | |
|--------------------------------------|----------|------|
| • CSC chamber production | 496/468 | 106% |
| • On-chamber electronics | | 110% |
| • FAST sites (testing w electronics) | 487/468 | 104% |
| • CSCs shipped to CERN | 495/468 | 106% |
| • CSCs installed | 360/468 | 77% |
| • CSCs commissioned | 352 /468 | 75% |
- Most of off-chamber electronics & HV production done
 - To be finished in beginning 2006
 - System integration in progress, including integration with Trigger, DAQ, DCS, DQM...

Recent slice test results: CSCs self-triggering working, calibration and synchronization procedures developed, data sent to global DAQ, muon tracks going through two stations registered

Preparations for Cosmic Challenge in progress



CSC Installation (Nov '05)

Installed chambers and services (w/o ME1/1)

• Mounting posts	720/792	91%
• CSC chambers	288/396	73%
• Skewclear cables	3672/4608	80%
• LVMB (LV monitor) cables	306/396	77%
• HV cables (1 per CSC)	288/396	73%
• LV cables (1 per CSC)	279/396	71%
• Grounding braids (1 per CSC)	270/396	68%
• Gas laterals (per CSC)	216/396	59%
• Water laterals (per CSC)	216/396	55%

All 72 ME1/1 chambers installed and tested

CSC installation is ~77% complete



ISR Testing Area





ISR Testing Area





ISR Testing Area





CSCs Transportation to SX5





Перед восхождением на диск



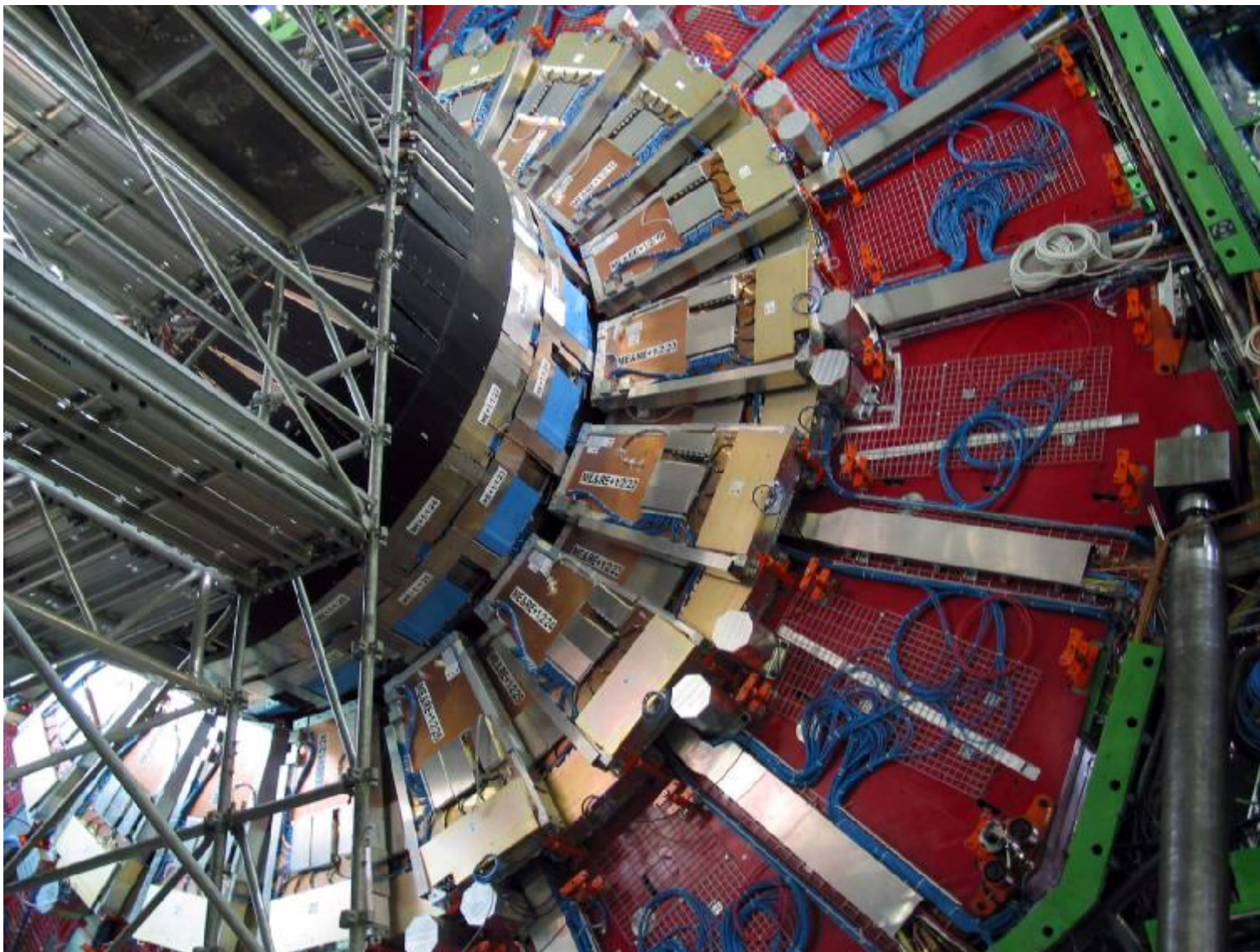


Installation under YE1 nose





Completed ME + 1/2 Station

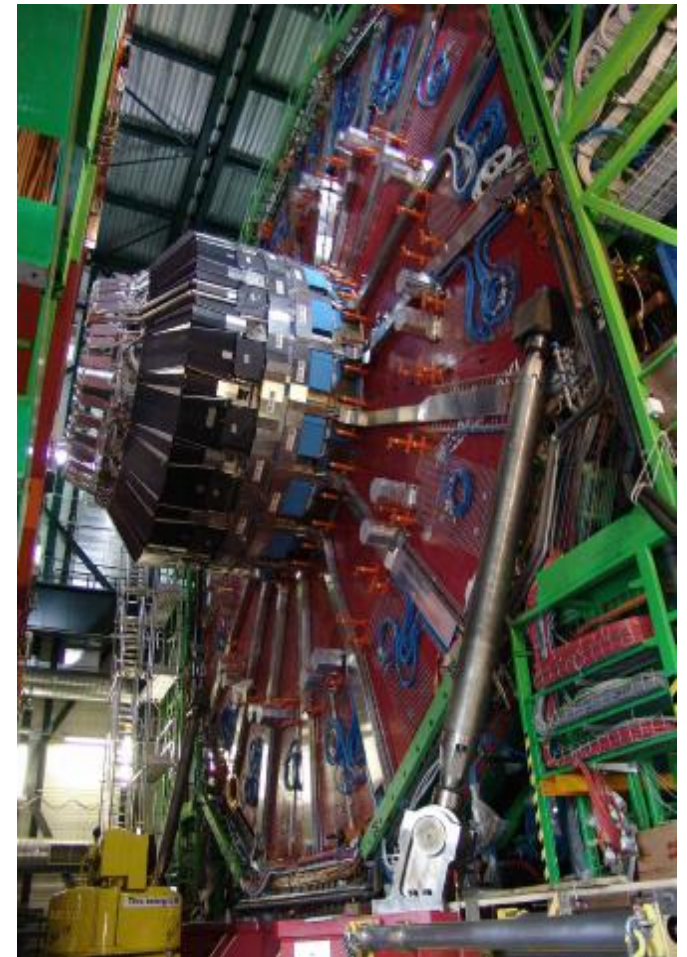
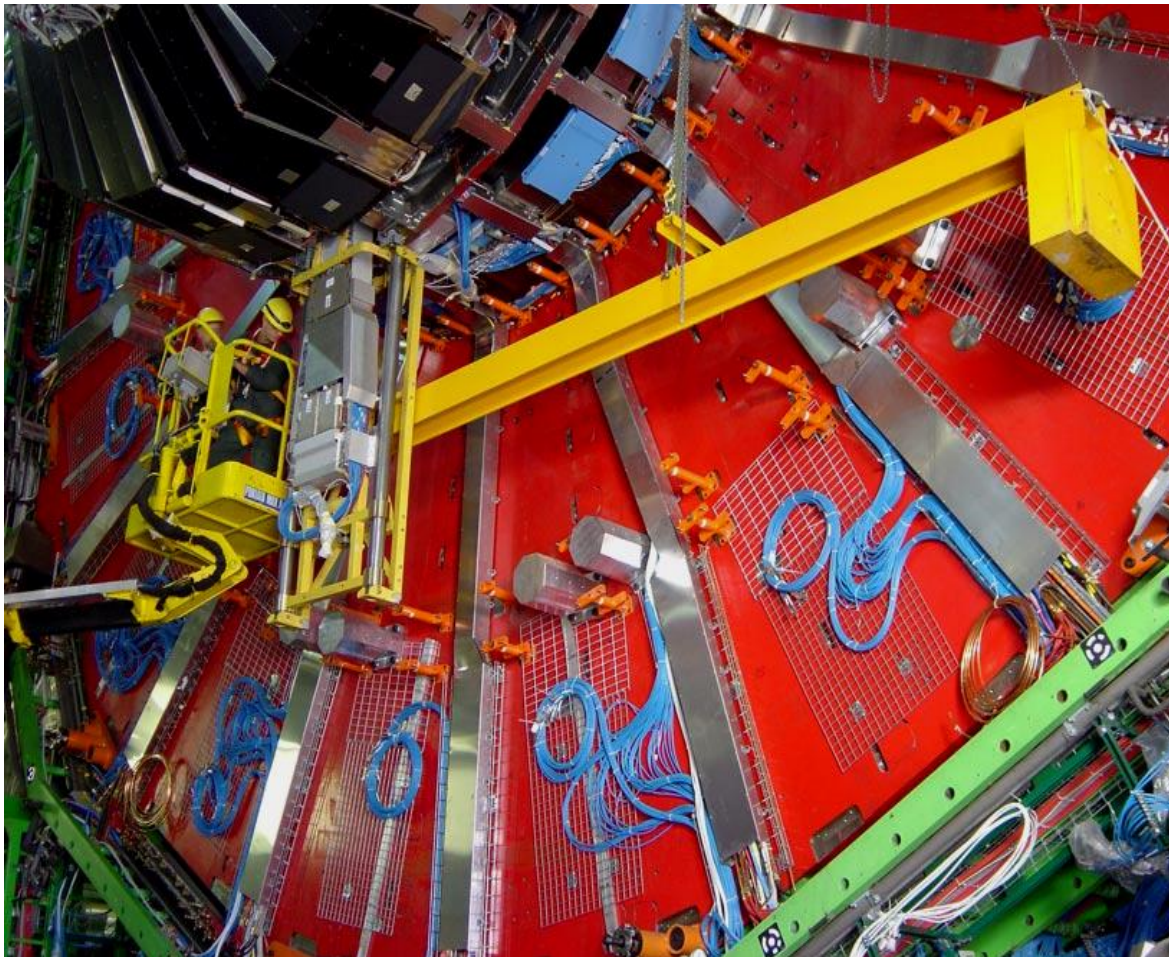




Installation of ME1/1 chambers

YE-1 completed 15 August, 2005

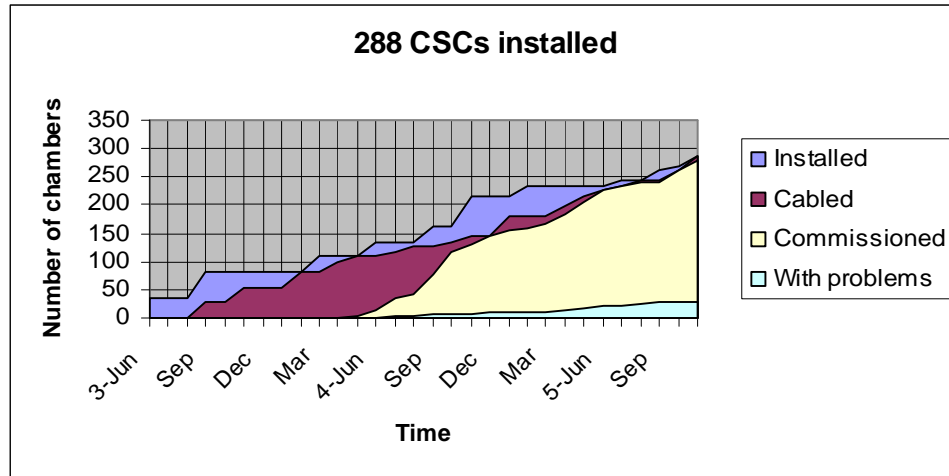
YE+1 completed 3 October, 2005



72 chambers installed and tested

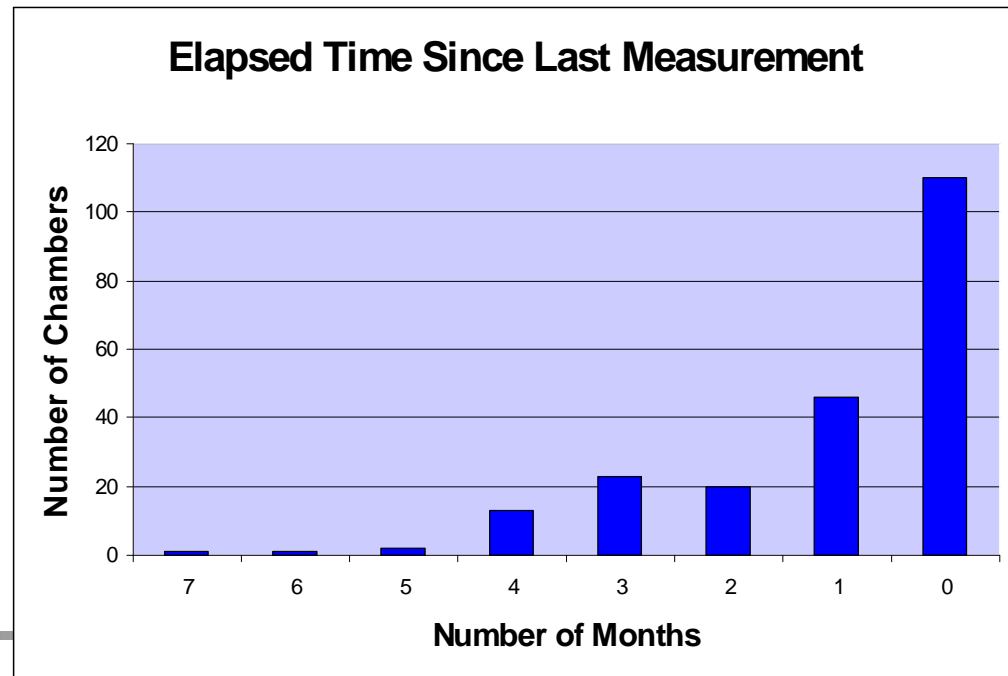


CSC Commissioning



- Use the same equipment and software (FAST-DAQ) as in production FAST sites
 - CSC commissioning closely follows installation
- 288 CSC installed, 280 CSCs commissioned

- Frequent retests:
At least every 3 months
- Takes care of infant mortality
- Long term stability
- Only minor problems detected





Future CSC Installation plans

- Plan to instal 18 “Back” ME-1/2 in Dec 05
- Install 18 front ME -1/2 Jan 06
- Install 36 +1/3 CSCs in February 2006
- Install 36 -1/3 CSCs after the magnet test

Note: All ME1/3 CSC can be installed only after corresponding RPCs are installed.

CSC installation is in good shape, will be finished on schedule



RDMS CMS Task Force: PNPI group

MC event generator HARDPING:

- n **BFKL-evolution**
 - n **Diffraction physics**
 - n **Heavy-ion physics**
-



RDMS CMS Task Force: PNPI group

BFKL-evolution: jets/dijets, b-quark production
SM/QCD background

New Physics: Quantum Gravity (Graviton/Pomeron)

Diffraction physics: dijets, b-jets in DPE- and SPE-processes
SM/QCD background

New Physics: Higgs, SUSY Higgs

Heavy-ion physics: hadron-nucleus, nucleus-nucleus collisions
jets, lepton-pair production

Physics: multiple rescattering, color stopping, screening, etc.
