DT Chambers Construction at Madrid 2000-2006

M.C. Fouz March´06

Chambers built at CIEMAT

60 MB2 + 4 Spares

10 MB4/10 + 1 Spare

Chamber production at CIEMAT is ended

A long way till now

First Chamber early 2001

CMS Week (September 2000)

STATUS REPORT FROM CIEMAT

1. *MB2 phi superlayer 1*

   We recabled the HV side (Marco di Giorgi was at CIEMAT last week). Cable lengths are fixed, and labels are used to make easier the cabling operation. The whole procedure was checked and some more experience obtained.

   HV tests were performed afterwards and the superlayer behaved properly.

   FE part still pending: we received all needed stuff from Padova, and we are waiting for Matteo's proposal of how to proceed.

2. *MB2 phi superlayer 2*

   Essentially finished: only missing thing is to glue the fifth aluminium plate which is ready.

3. *MB2 theta superlayer*

   First layer of I beams glued. Luciano has been calibrating the wire position mesurements (CCD camera versus laser interferometer).

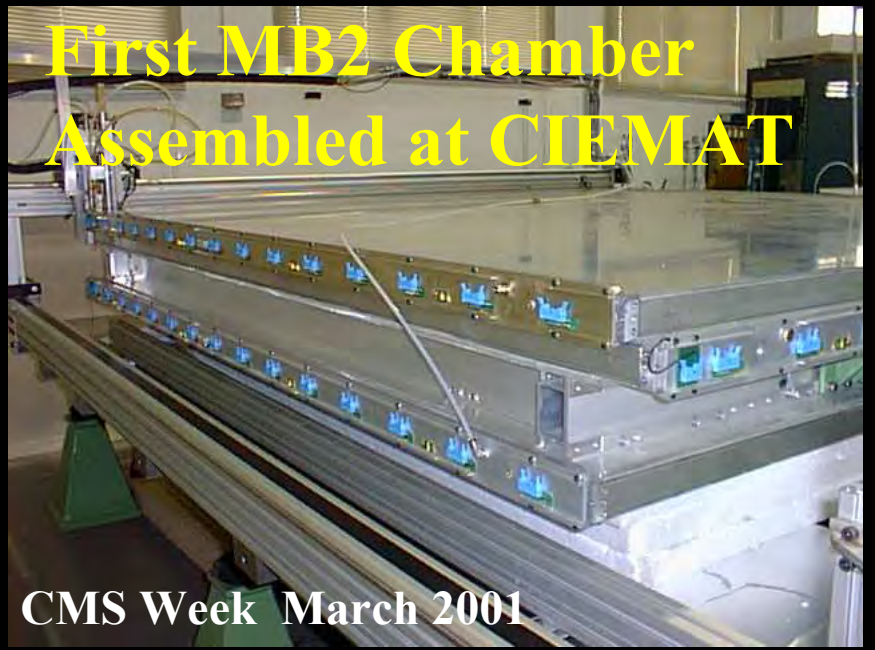
Muon Week November 2000

Brief Report from CIEMAT

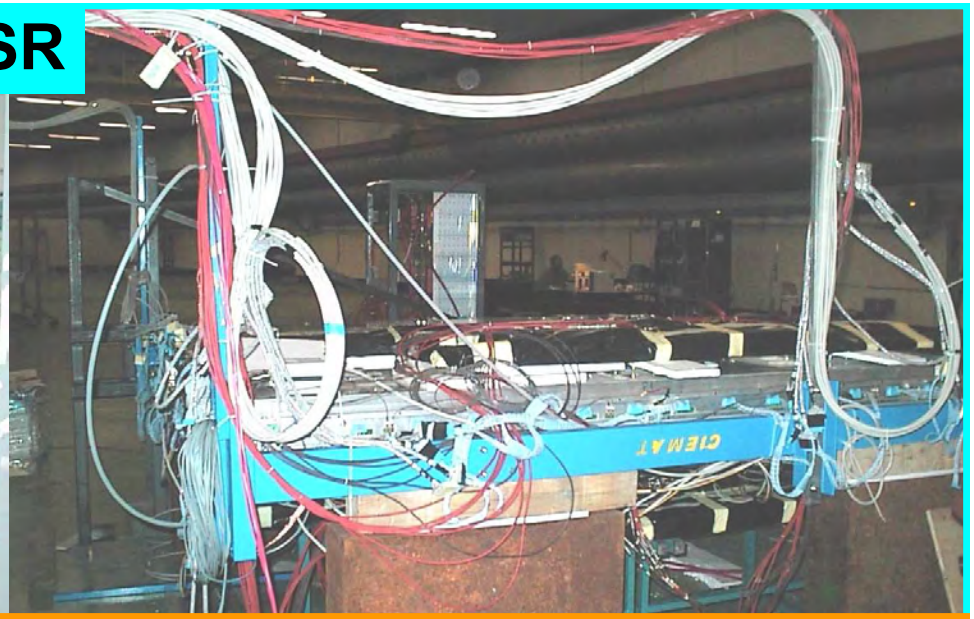
1) We are installing Front End electronics in our first MB2 Superlayer. Carlos Willmott will report on the experience we have got so far on this operation.

2) Not much progress in the assembly of theta SL and other ongoing activities at CIEMAT (Luciano has not been working during the last 4 weeks).

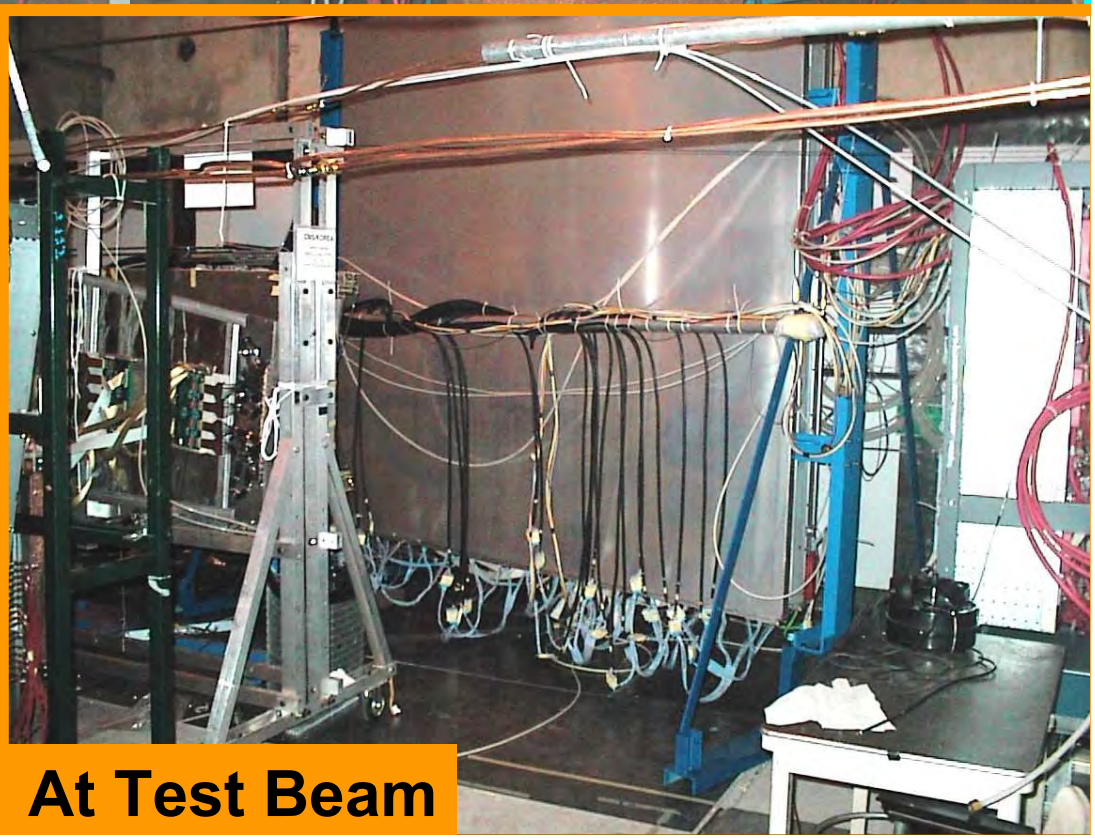
3) Our main priority is to finish the assembly and tests of the first MB2 chamber before the end of the year.



Testing at ISR



First MB2 Chamber at CERN Summer 2001

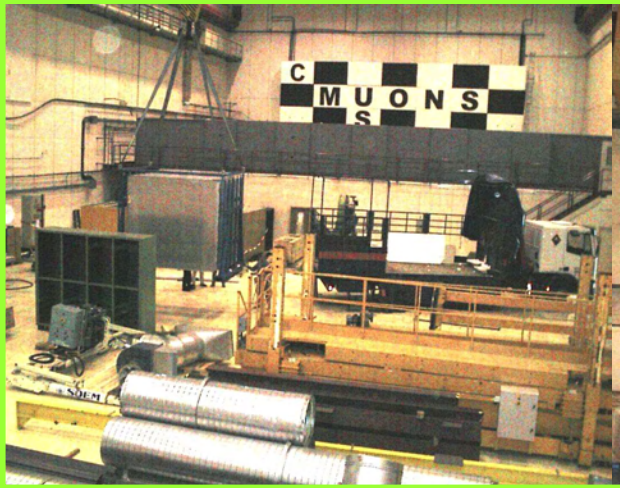


At Test Beam

First chamber transport

CIEMAT

ISR-CERN



Several minor & major "crisis"

Problems with Boards (I)

HV Boards:

Some boards have output dead channels

31(new)+16(old) boards tested, problems found in:

ID Code	Problem IN
OLD	Wire #7 (W2)
311	Wire #7 (W2)
318	Wire #4 (W1)
329	Wire #4 (W2)
338	Wire #3 (W1)
341	Strip Right S1
345	Strip Right S2
346	Wire #7 (W2)
358	Strip Left S1

NEW Boards:
25 % failed

CMS Week June 2001
DT Meeting

Problems on TP connector feethroughs

Last week we used for the first time the TP connectors received on the last shipment.

We found that some of them don't work.

Reason: a short circuit due to a bad soldering (most frequently in the part glued to the SL cover).

Statistics:

TP assembly 4	5% fails	(total 220)
TP assembly 3	13% fails	(total 123)
TP assembly 2	0% fails	(total 20)

Average failure 7.5%

In previous 10 Chambers (120 TP) this problem was not found

Muon Week, April 2002

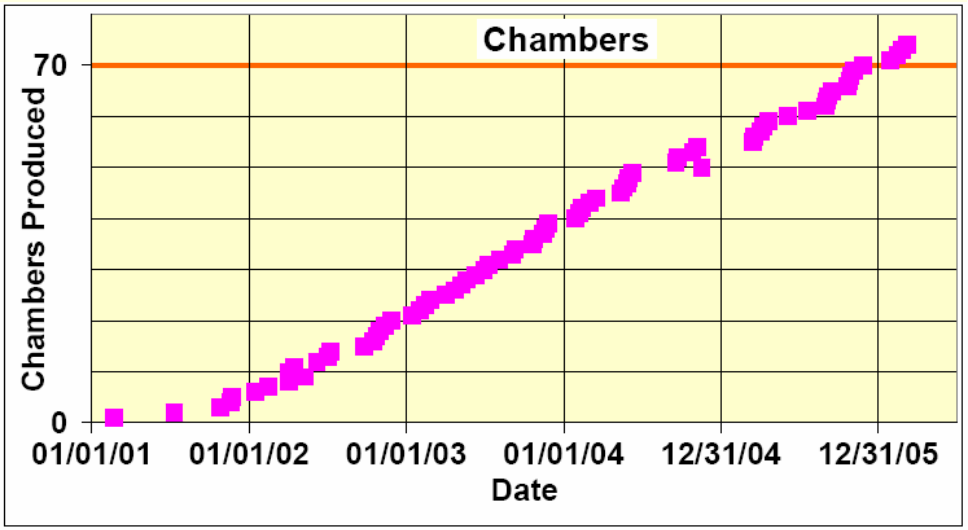
The long HVB "saga"

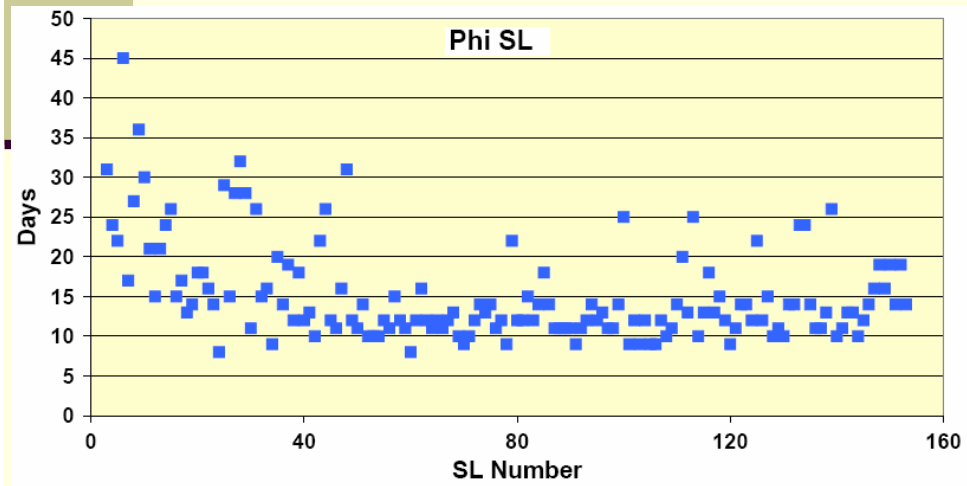
- "Old-Green"
- "Yellow"
- "Yellow – cooked"
- HVB-I
- HVB-v5

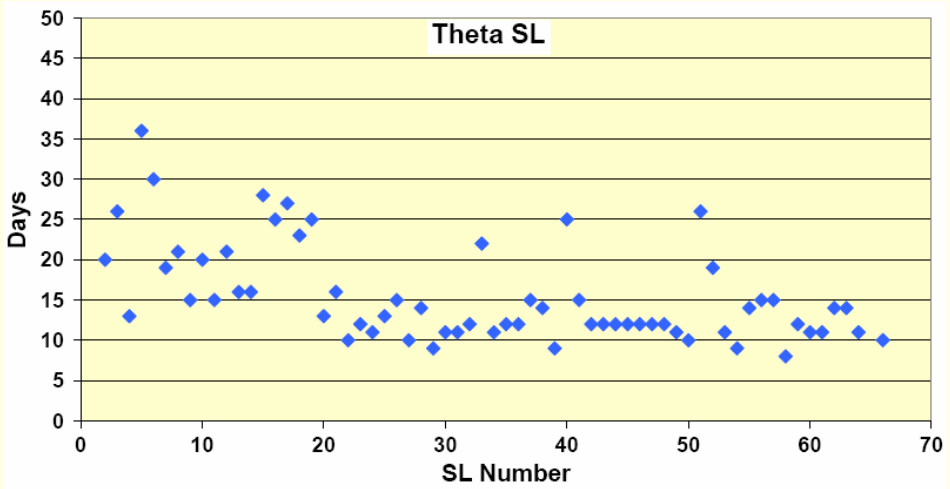
In the last minute……

Problems at HVC

Production Rate



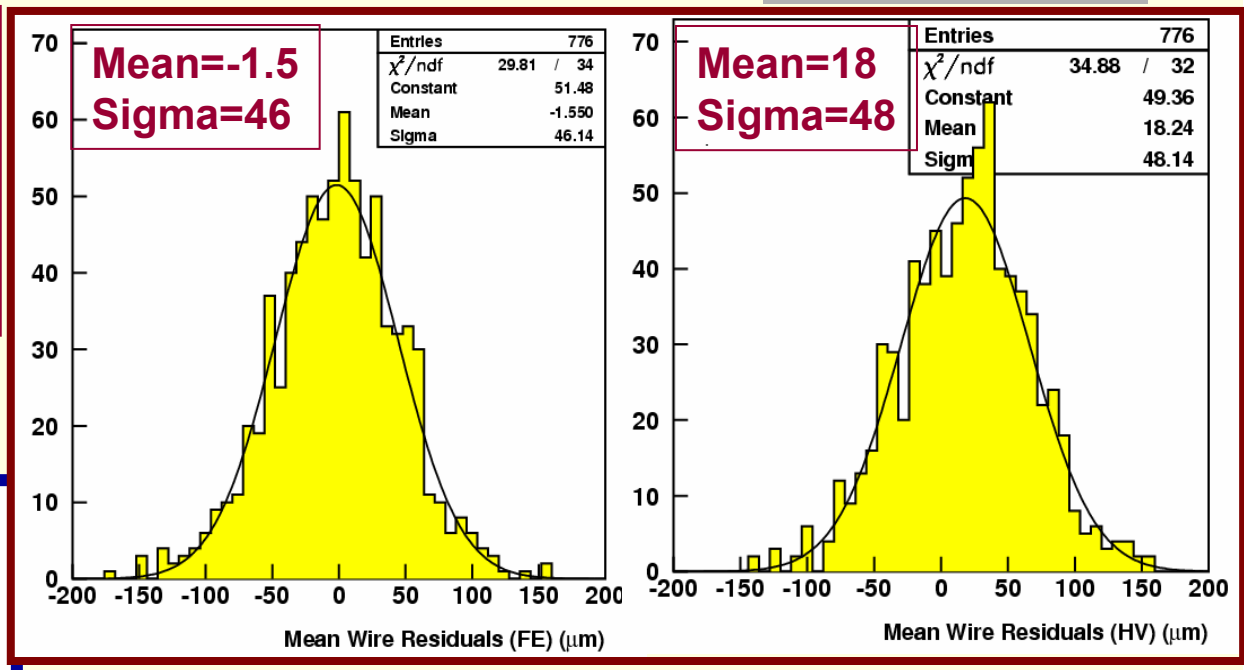


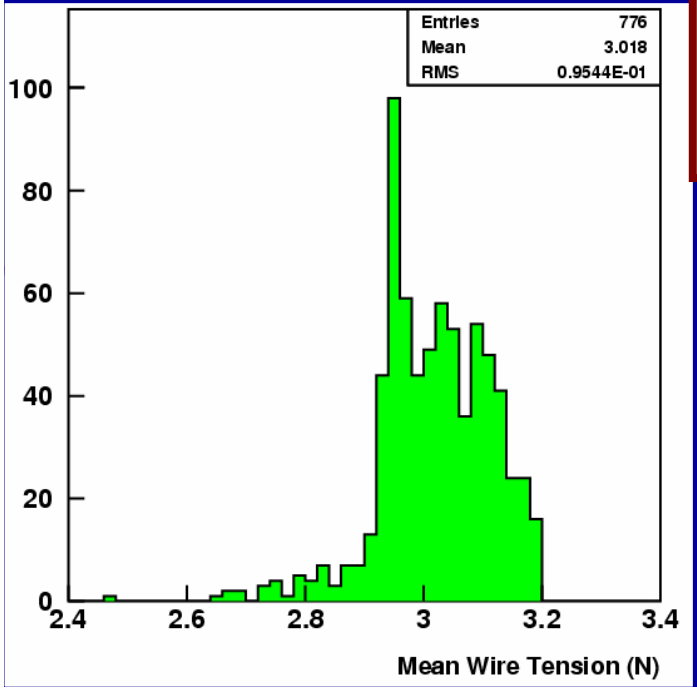


Wire Position & Tension

Average Layer Positions

Inside the 100 μm requirements

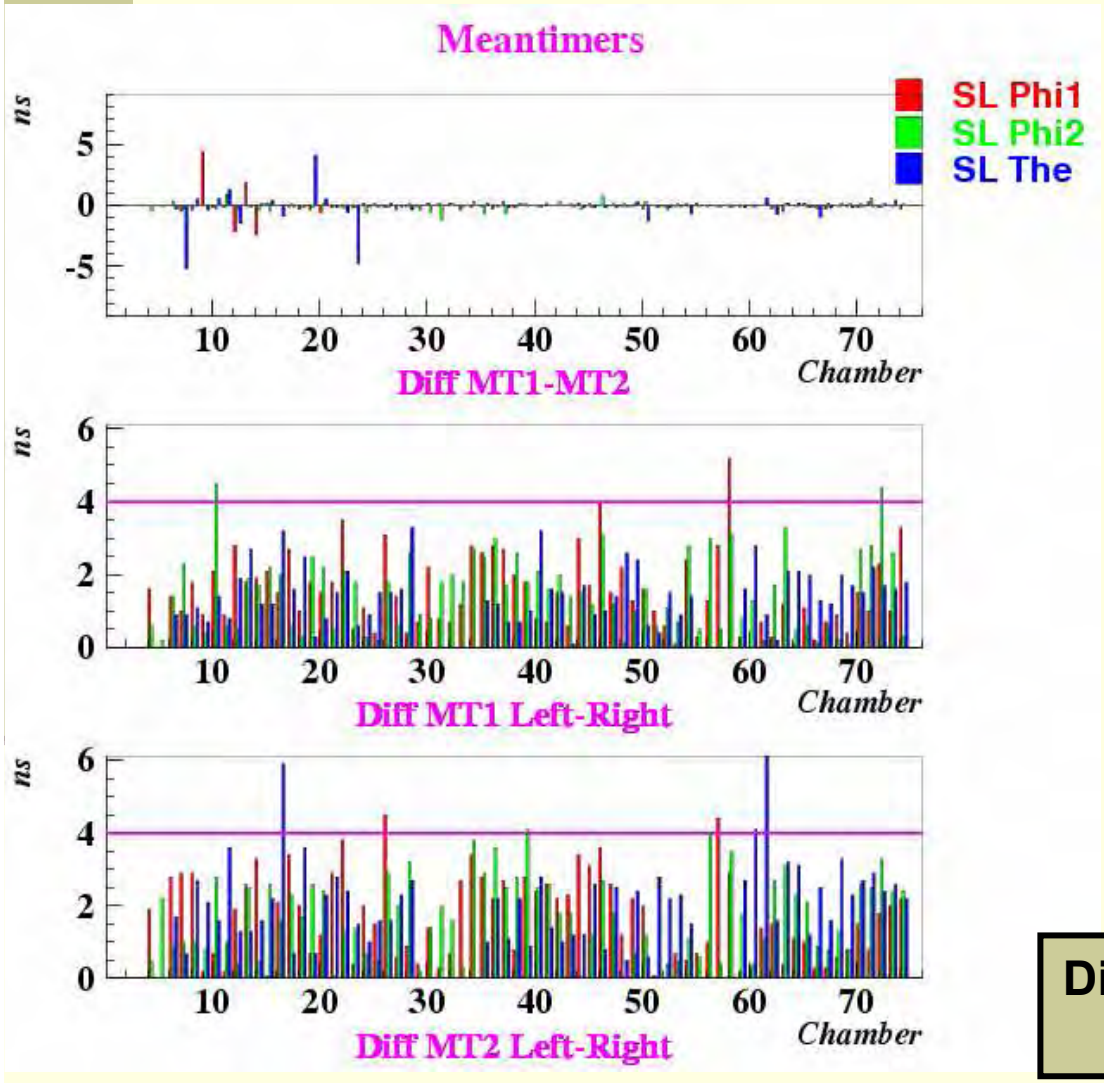


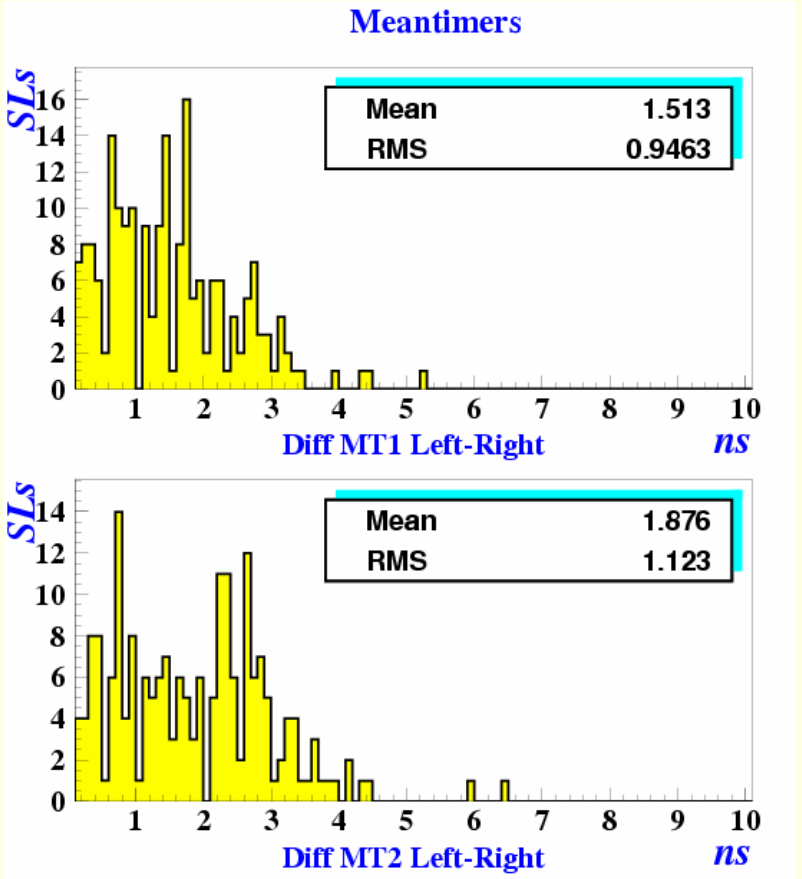


Wire Tension

(Different "peaks" associate to different assembly tables)

Meantimers

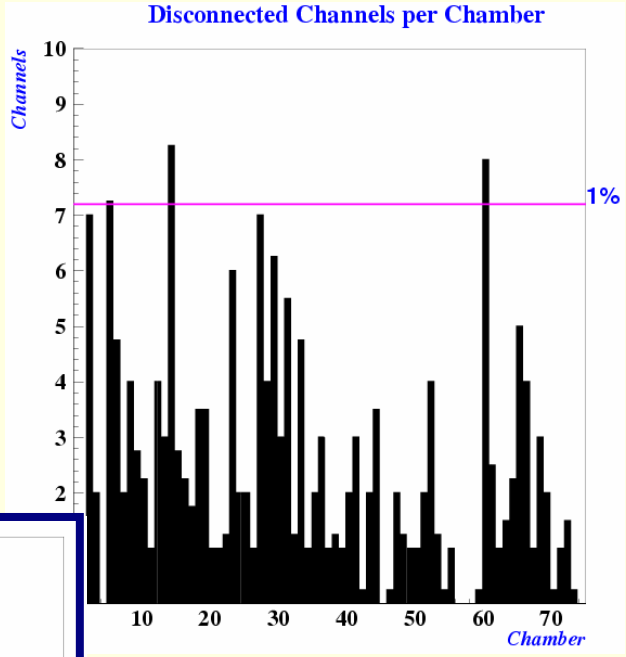


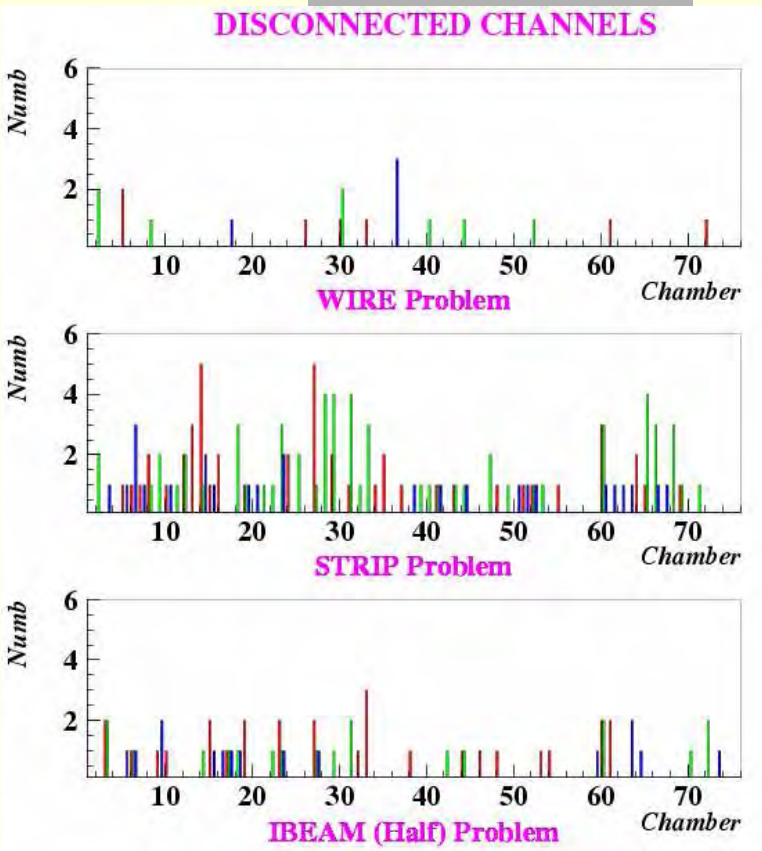


Differences MT Right-Left
< 4ns ➔ < 100 μm

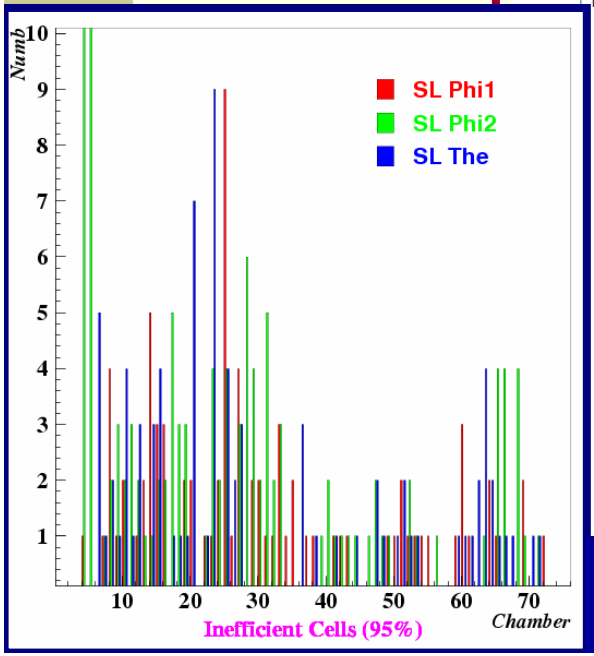
Disconnected & Inefficient Cells

Disconnected Cells <1%



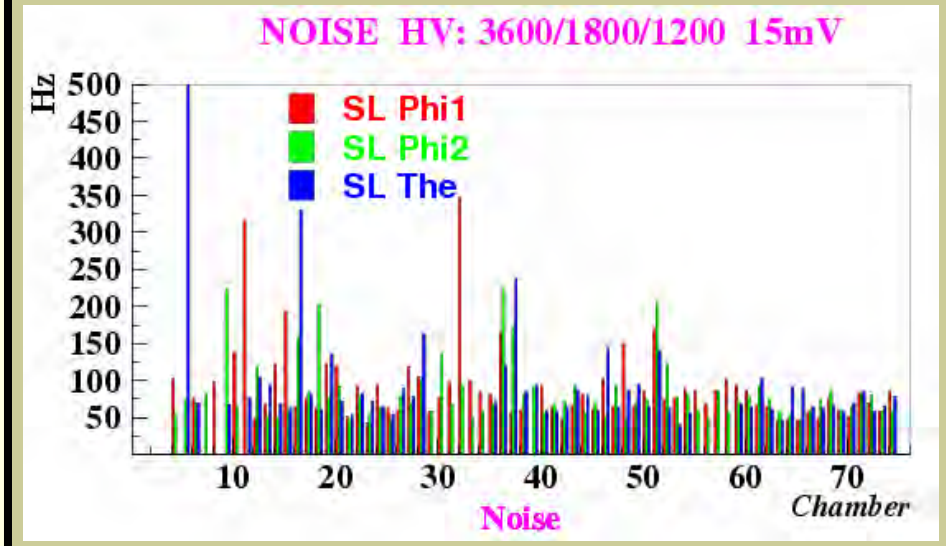


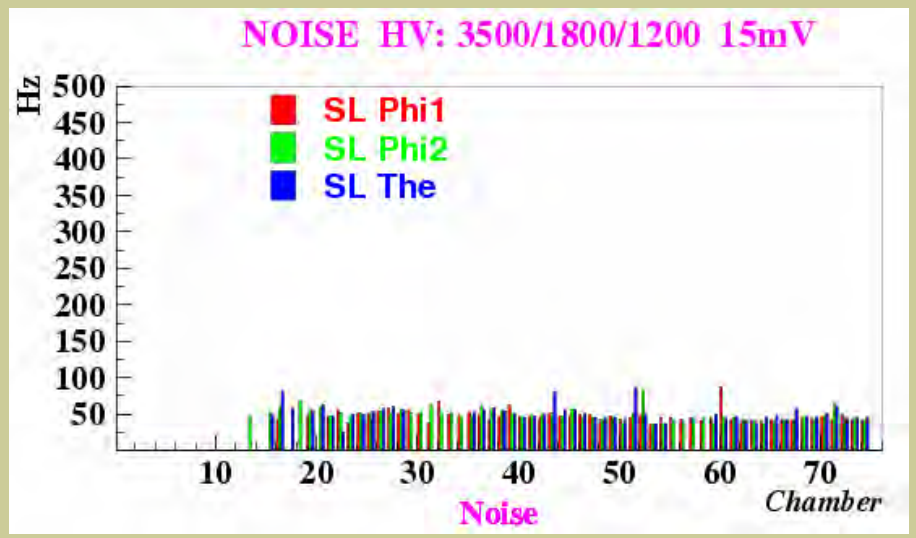
Main reason:
Strip problem
(damaged, glue …)

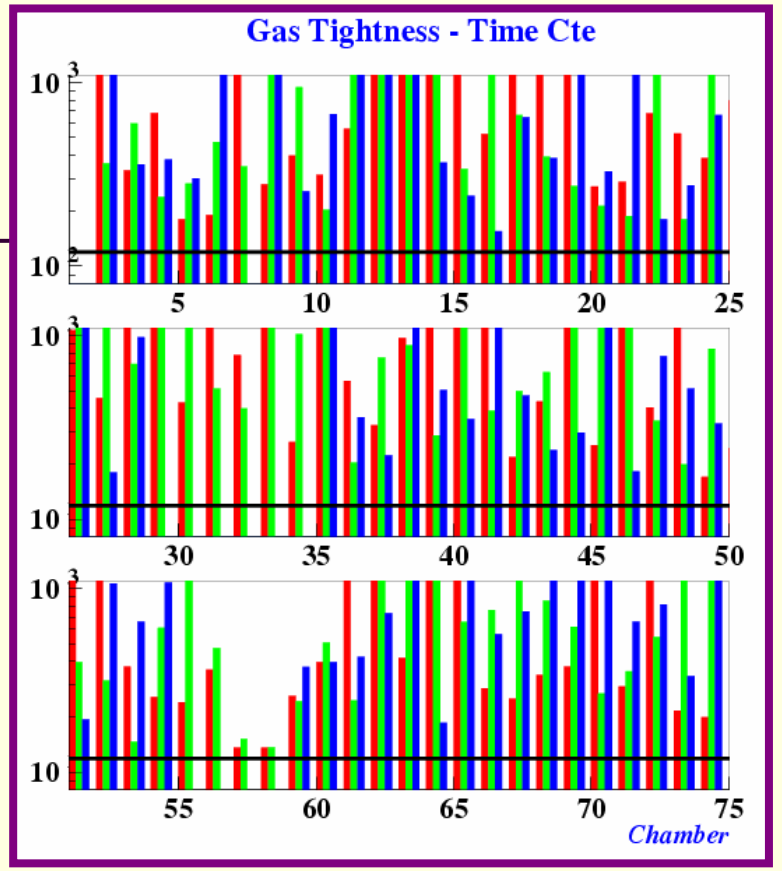


In most of cases:
Cell inefficient = Disconnected Channel

Gas Tightness & Noise







Noise depends on how many time the SL was under Gas & HV.

The production on numbers

60+4 MB2 & 10+1 MB4 Chambers (Total=75)

➔ More than 50000 DT Cells

More than

- ➔ 400 km of glue cordon
- ➔ 25500 daisy chains connected
- ➔ 50000 connections wire – HVCBoards
- ➔ 50000 connections wire – HVBoards
- ➔ 3000 bridge connections between HVBoards
- ➔ 14000 connections between HVBoards & HVconnectors
- ➔ 15000 screws
- ➔ 6000 Data Runs (TP, Noise & Cosmic) taken and analyzed

The numbers does not include the multiple "extra" interventions and the HVB replacement

Chambers at CERN

Chambers at CERN:

32 MB2+ & 27 MB2- & 10 MB4 (69 Chambers)

Next Shipment:

End of March: 5 MB2-

2 SLs for the spare MB4/10 stay at Madrid

Chambers with OLD-HV Boards:

3 MB2+ & 2 MB2-

2 MB2+ & 2 MB2- Spare Chambers

Being replaced from this week

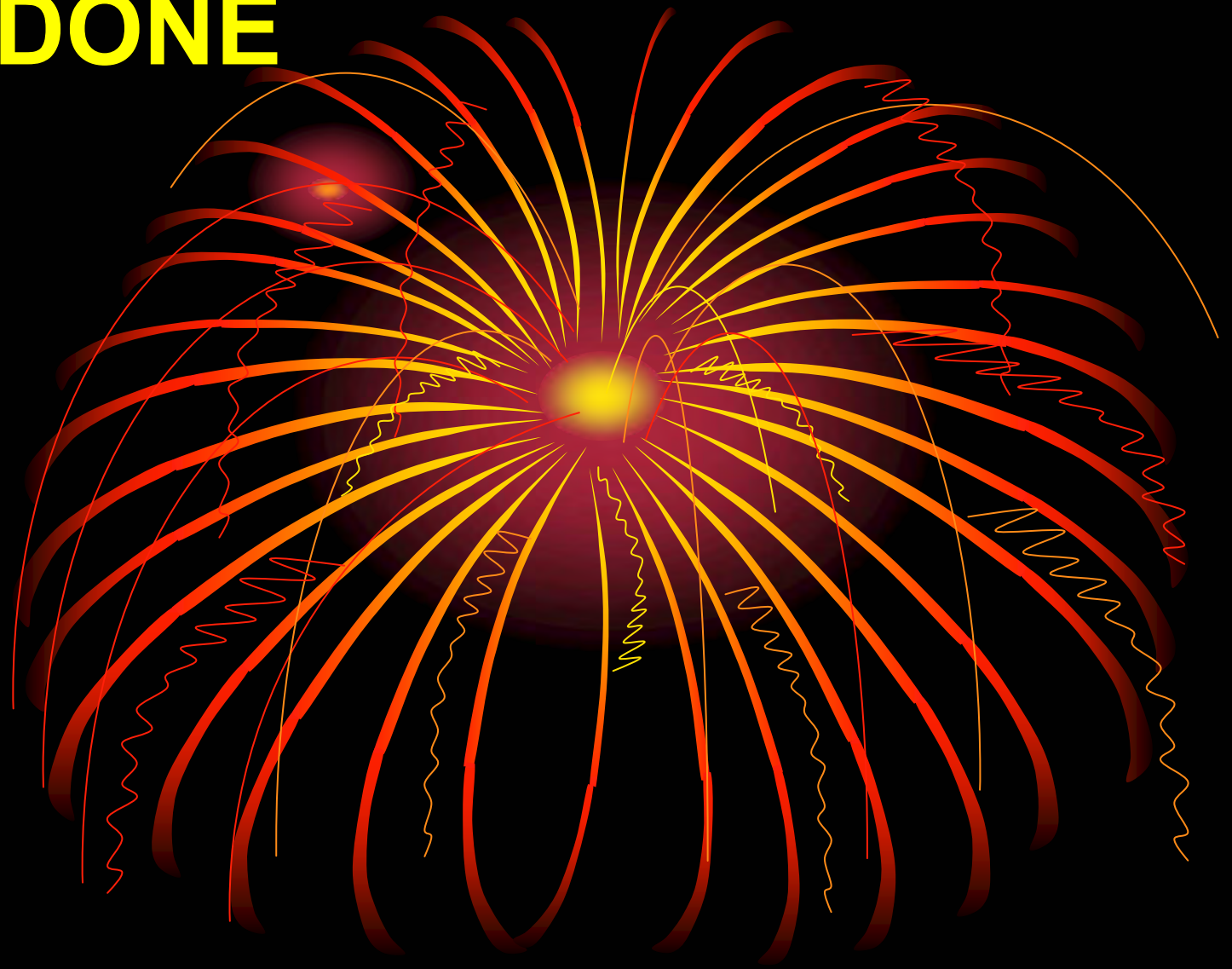
Marcos Cerrada	Physicist
Luciano Romero	Physicist
Mary-Cruz Fouz	Physicist
Jesús Salicio	Physicist
Jesús Puerta	PhD Student
Carlos Villanueva	PhD Student
Manolo Daniel	Engineer
José Miguel Ahijado	Technician
José Alarcón	Technician
Francisco García	Technician
David Francia	Technician
Juan José Martínez	Draftsman
Antonio Pardillo	Technician
J.Carlos Puras	Technician
Jose Luis Ramirez	Technician
Julian Romero	Technician
José Risco	Technician
Nicanor Colino	Physicist
Begoña de la Cruz	Physicist
Pablo García Abia	Physicist
José M. Hernández	Physicist
Isabel Josa	Physicist
Carlos Willmott	Physicist
María Aldaya	PhD Student
José Caballero	PhD Student

The End

The people from the CIEMAT Workshops

The Electronic Division at CIEMAT

TO BE DONE



THE PARTY !!!