



# TIB Layer 1 Module Testing: first results

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CMS Week

Module Test Meeting

16<sup>th</sup> March 2004



# Outline

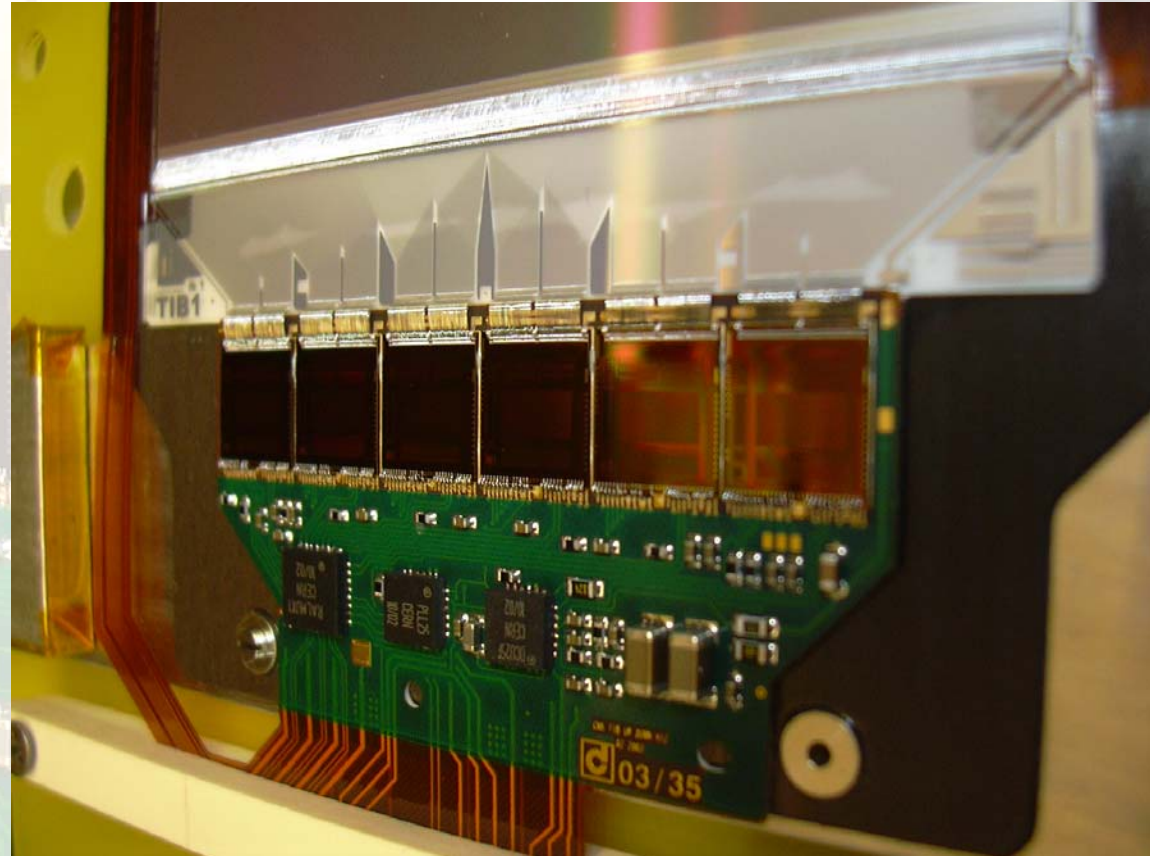
- First TIB1 modules (6 APVs) arrived at bonding centers last week
  - until last week only TIB3 (4 APVs) modules were bonded and tested
  - different bonding procedures
  - ARCS test results



# TIB1 ib1 Modules



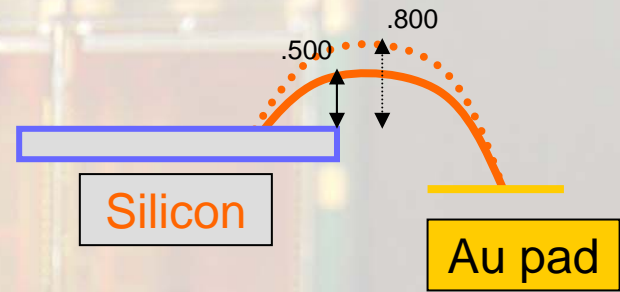
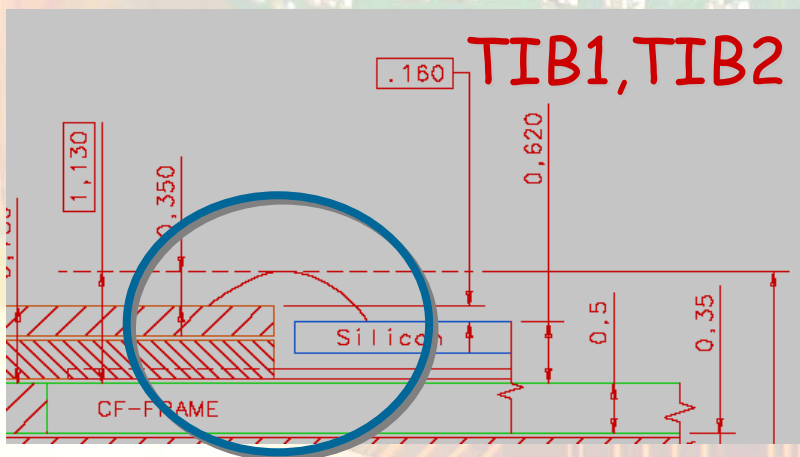
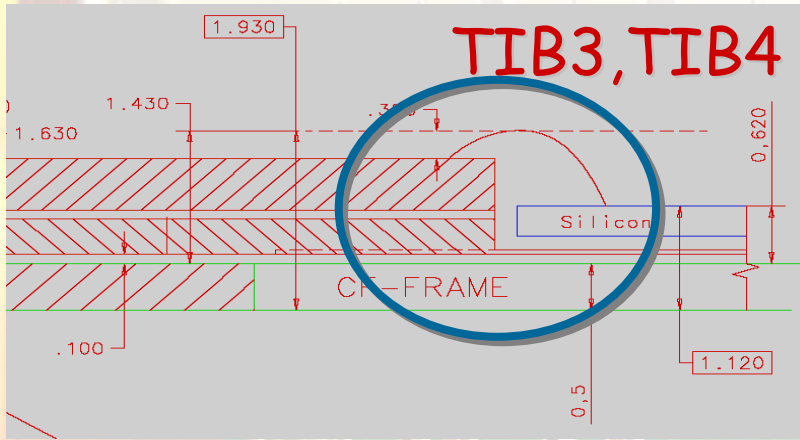
- TIB1 modules
  - layer 1
    - 6" single sensor
    - $61 \times 117 \text{ mm}^2$
  - 6 APVs
    - $6 \times 128 = 768$  channels
    - $80 \mu\text{m}$  strip pitch
  - ib1 Pitch Adapter
    - TIB.1.1 ( $r\phi$ )



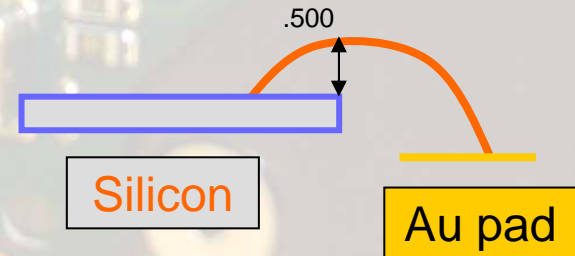


# Bonding

- Different bonding procedures for Layer 1 modules
  - strong constraints from mechanics
  - in Florence new automated program for Delvotec 6400 by Mirko Brianzi ready



bonding Bias Ring -  
Filter Capacitor





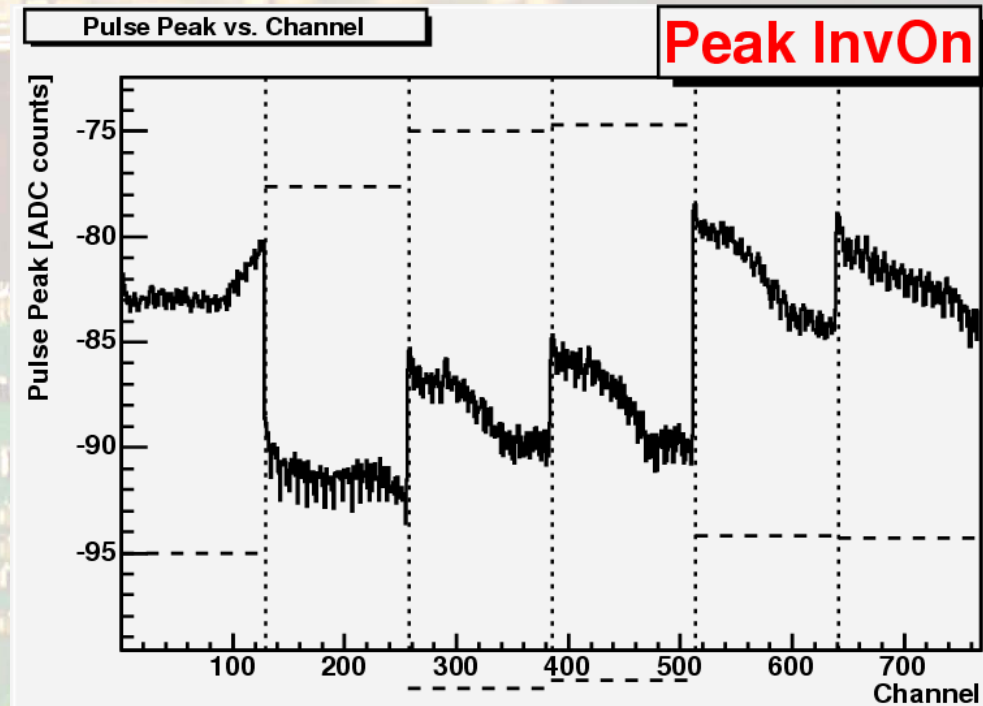
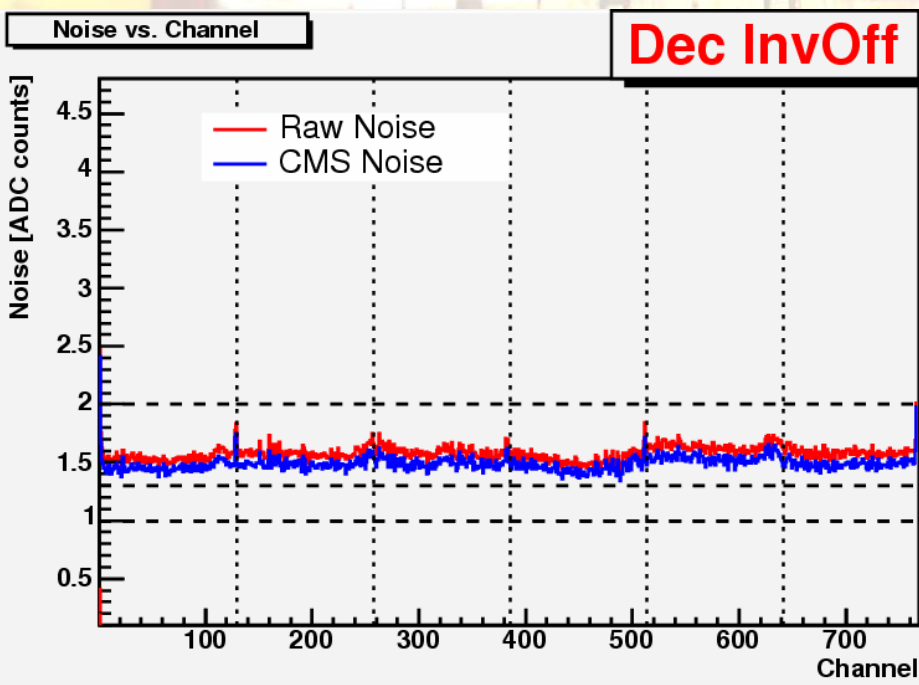
# Modules bonded

- TIB1 modules bonded (up to 11<sup>th</sup> March): 9
  - 5 in Bari
    - 30200020035...
      - » 196,197,202,203,204
  - 4 in Firenze
    - 30200020035...
      - » 198,199,200,201
- 7 modules are OK and ready for Long Term
- 1 module has problems with root file
- 1 module has a pinhole
  - channel 287 of module 30200020035202
  - sensor 30220131500636 measurements not present in database, hybrid 30216701603834 is OK



# ARCS test results

- ARCS tests done for 9 modules
  - all APVs are below CMN RMS 0.4 threshold in PeakInvOff
  - same cuts as TIB3 (4 APVs, 512 strips) can be applied
  - no need to change the cuts (up to now)



Mod.30200020035201

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16<sup>th</sup> March 2004

TIB Layer 1 Module  
Testing: first results

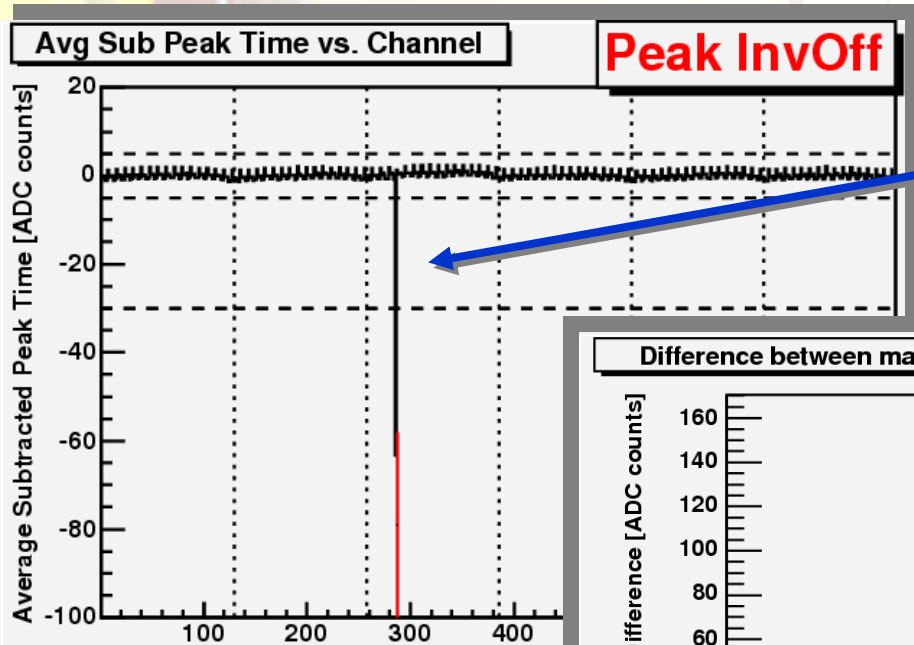
Mod.30200020035204

U lffdugr U dq lhl 6

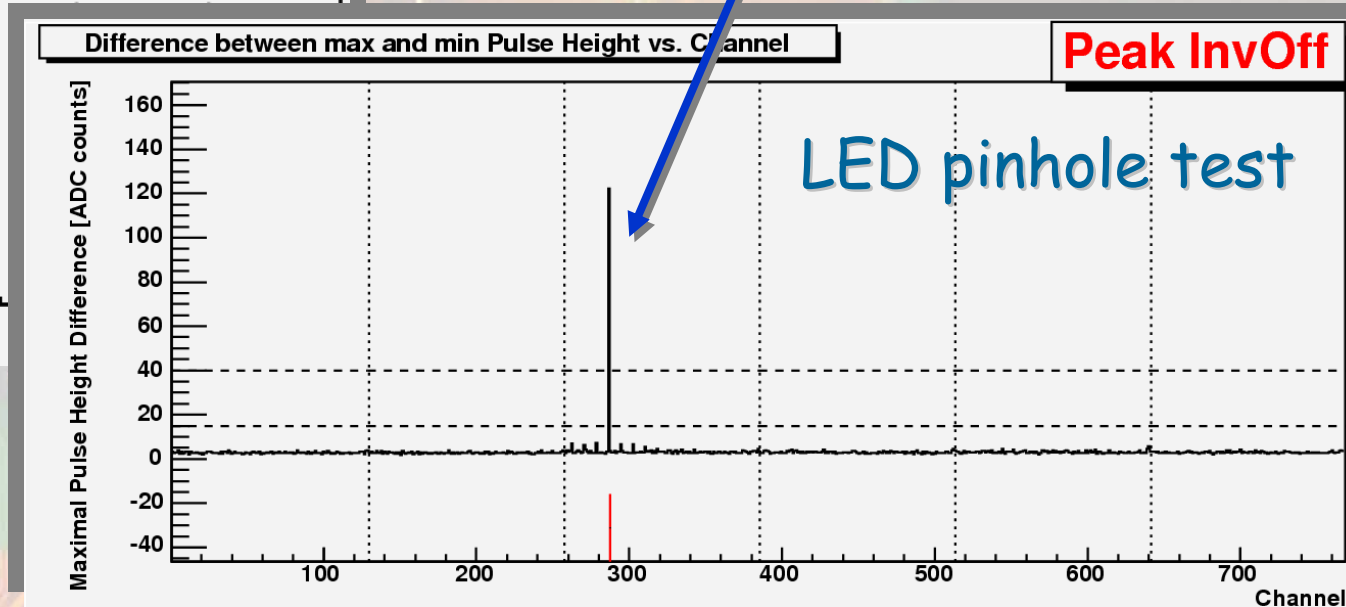


# The pinhole candidate

- Module 30200020035202: pinhole candidate ch.287



PHL+ confirmed by all possible tests

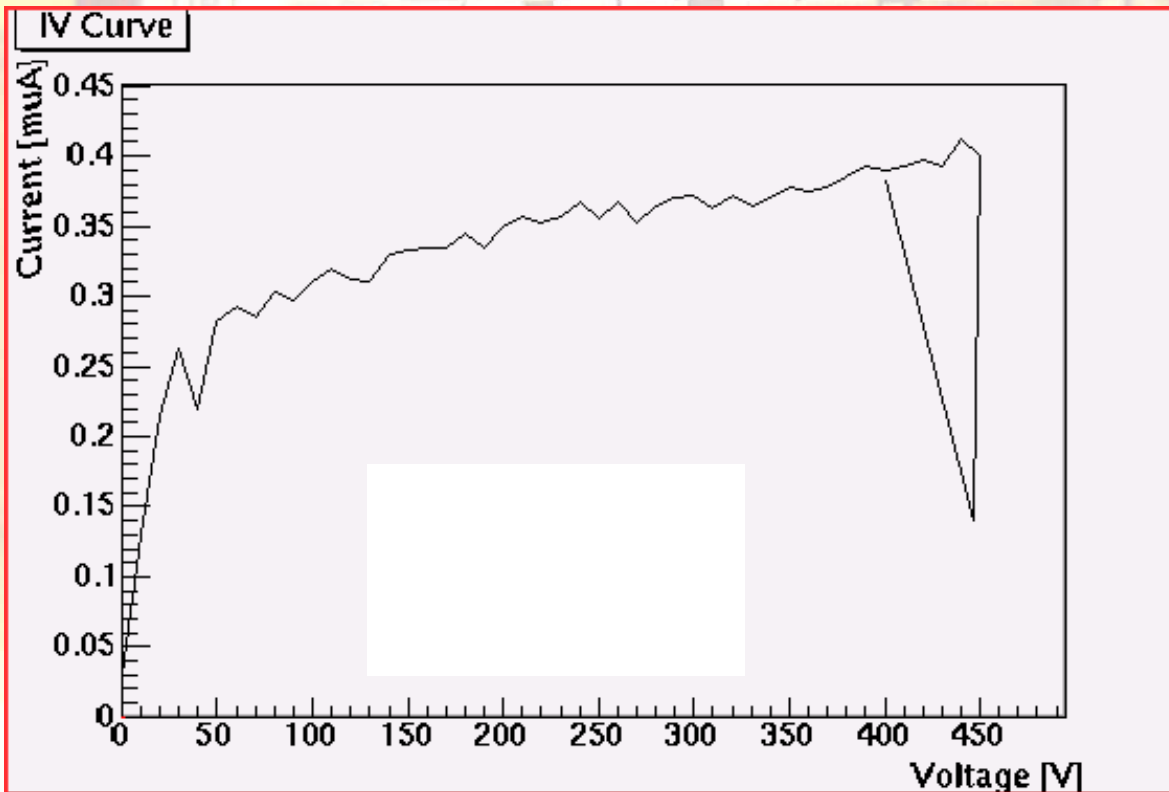




# IV curves



Mod.	196	197	198	199	200	201	202	203	204
$I[\text{nA}] @ HV=400V$	219	261	340	378	190	180	300	158	263



- current values well below the limits



# Root macros

- Some minor changes/bugfixes of ARC and LT root macros (see my talk at Tracker Week Feb'04)
  - <http://hep.fi.infn.it/CMS/moduletest/tkwfeb04/rranieri040210.pdf>
    - correction of some bugs related to the presence of 6 chips instead of 4
    - where to download new version of the macros:
      - <http://hep.fi.infn.it/CMS/marchett>
- to run with 6 chips: change **nChip** variable initialisation from **4** to **6**
  - $nChip(4) \rightarrow nChip(6)$ 
    - rrARCS.cc
    - rrLT.cc



# Conclusion

- First TIB1ib1 modules bonded and tested
  - TIB1 = 6 APVs = 768 channels = 80 $\mu$ m pitch
  - bonding
    - different procedures with respect to TIB3ib2
      - TIB3 = 4 APVs = 512 channels = 120 $\mu$ m pitch
      - loop height constraints
  - ARC test (after bonding)
    - same cuts can be applied both for TIB1 and TIB3 modules
  - ROOT macros
    - some bugfixes to run macros with 6 APVs modules
      - <http://hep.fi.infn.it/CMS/marchett>
        - » rrARCS.cc
        - » rrLT.cc