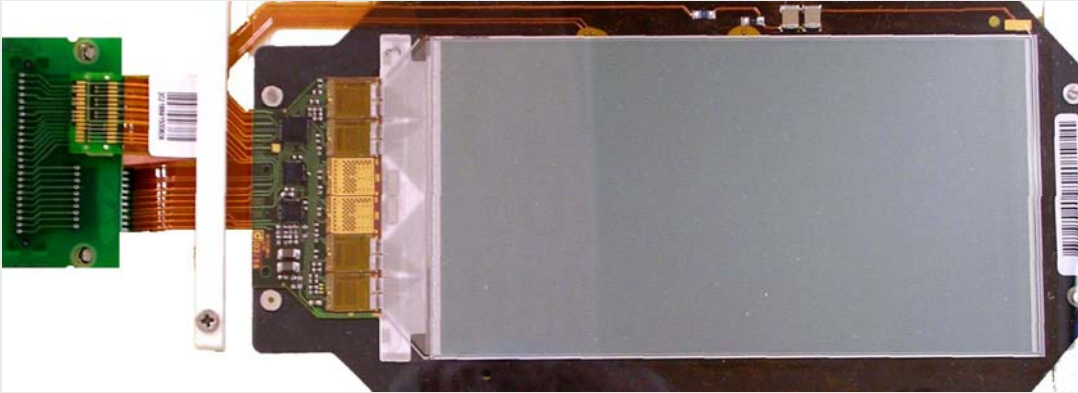


# Module test in Pisa



Paolo Azzurri  
CMS Tracker week 20/04/2004

# Lab ARC Setup



Fast test station

Final test station

Will bond & test  
~1000 TIB modules

# Lab Storage

Temporary storage  
space used  
between test stages



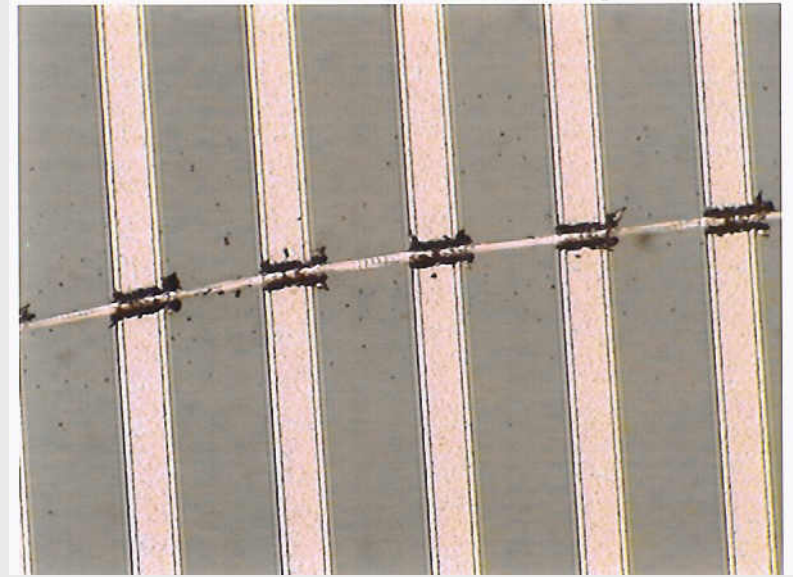
Nitrogen

Flow boxes  
for final storage

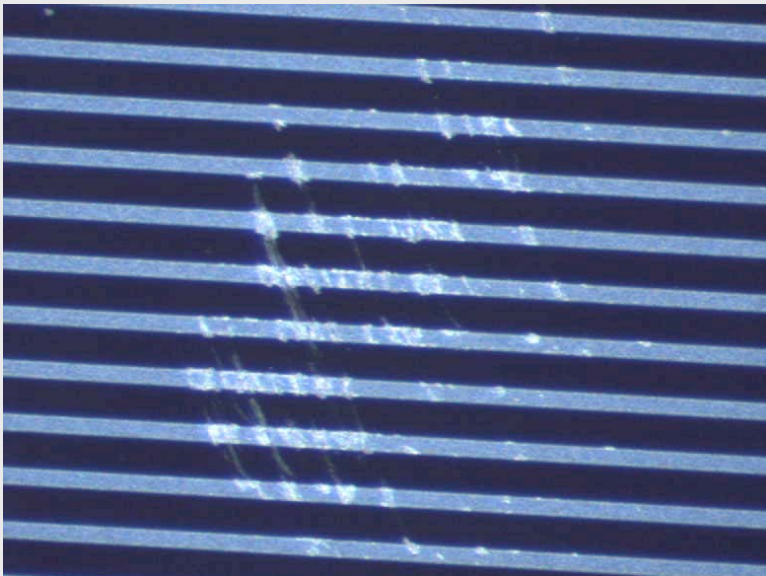
20/04/2004

Module Test in Pisa

# Optical Inspections



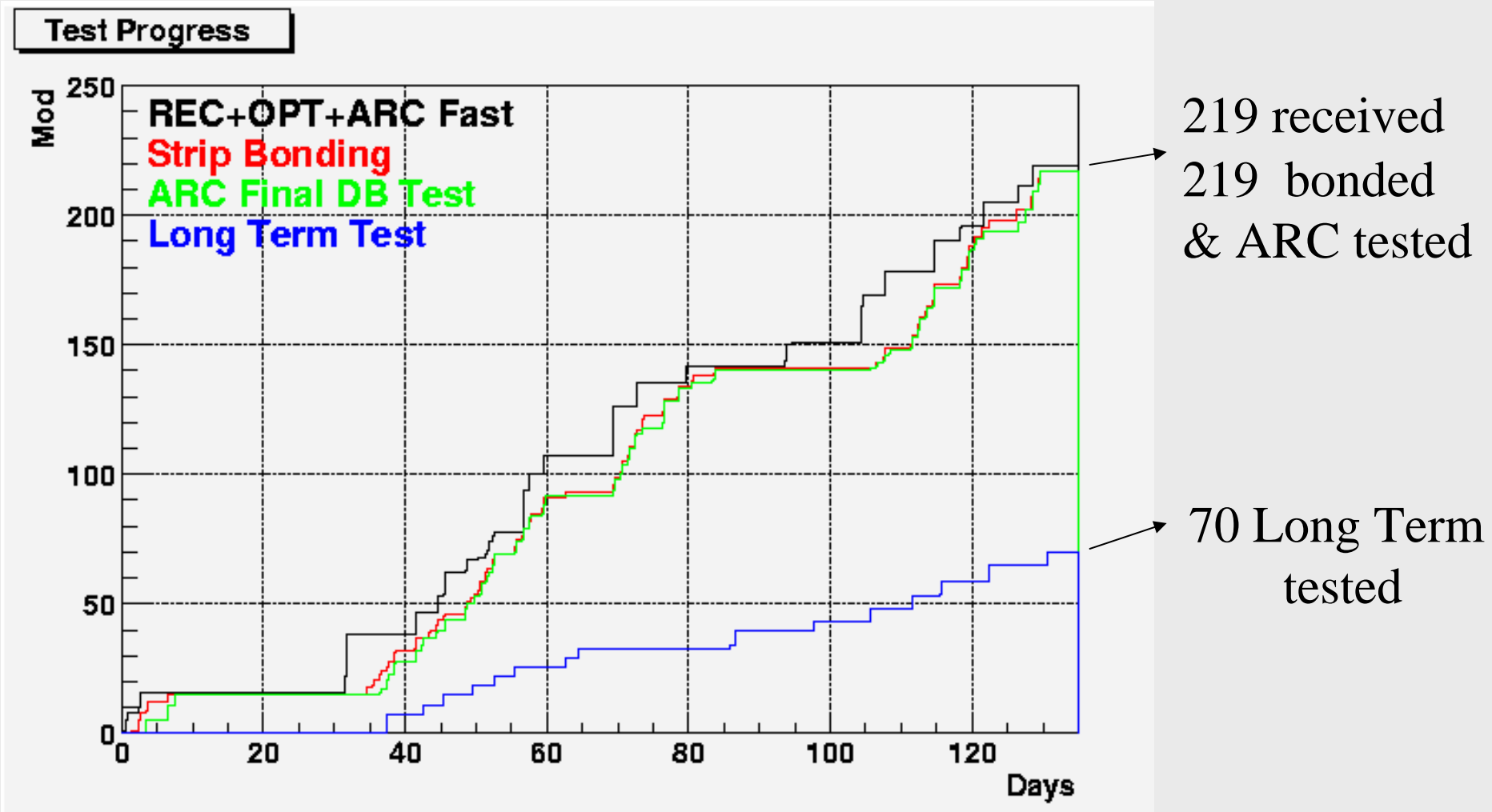
Scratches and deposits  
causing shorts & pinholes



20/04/2004

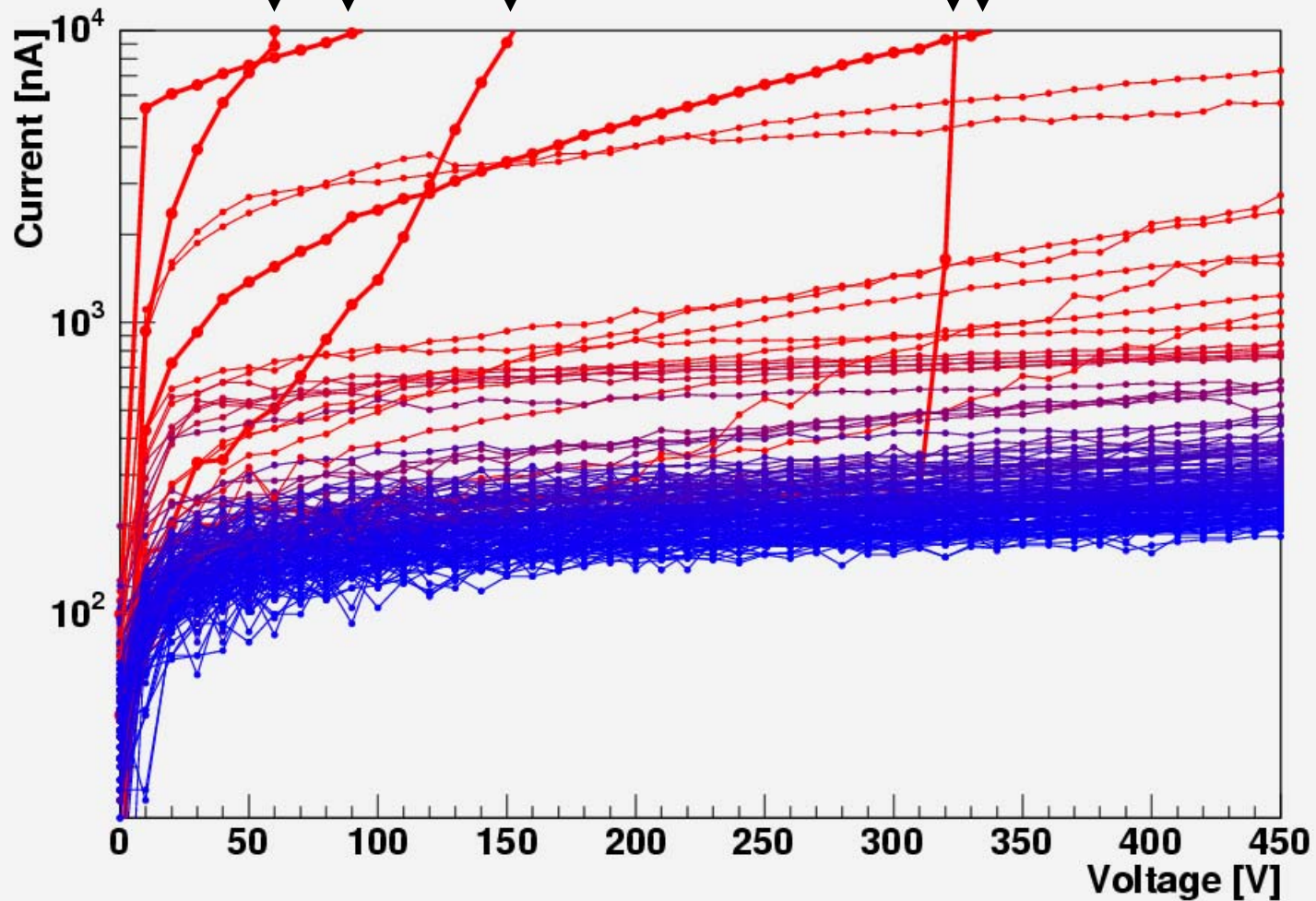
Module Test in Pisa

# Test Rates



# IV Curves

5 Module currents above grade C limit ( $>10\mu\text{A}@450\text{V}$ )



# xFLAG analysis

Tested on 193 final ARC .root files  
21 did not produce any output

...investigating the source of the problems  
may have to modify/redo some of our .root outputs

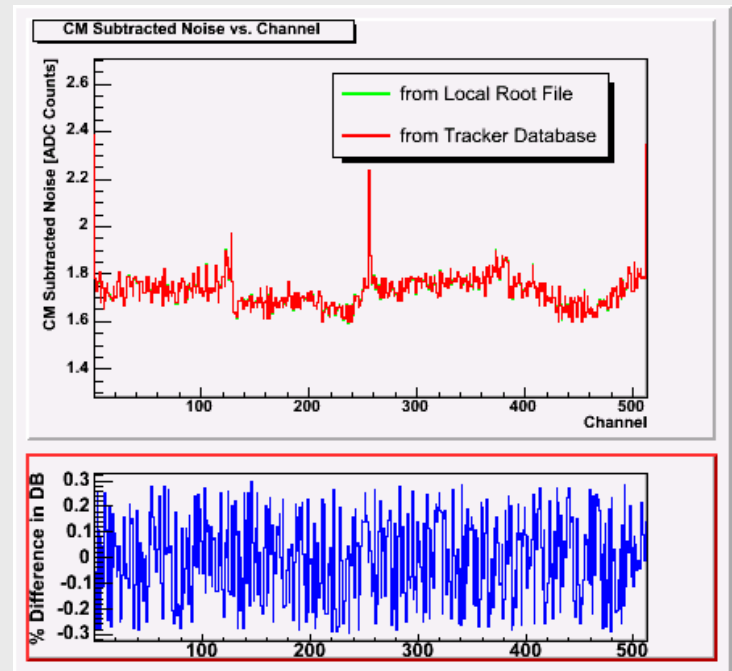
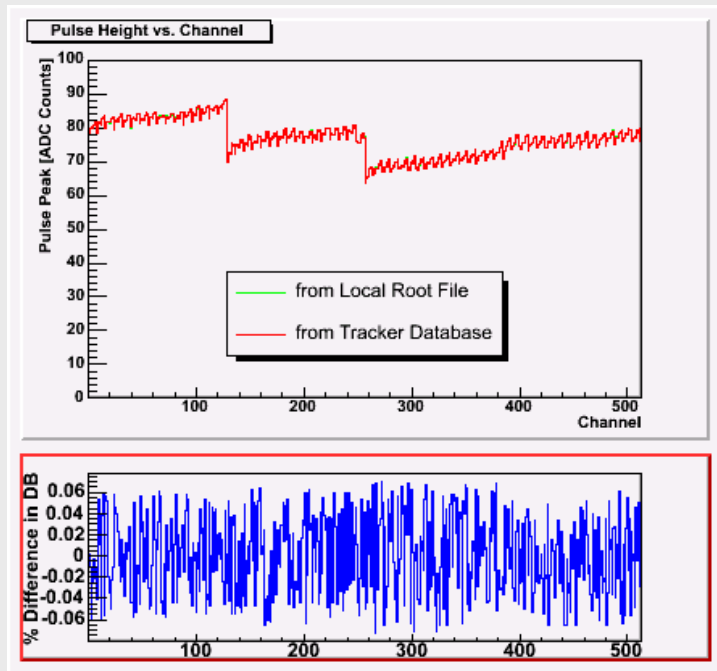
# database upload

uploaded one module (30200020033021)

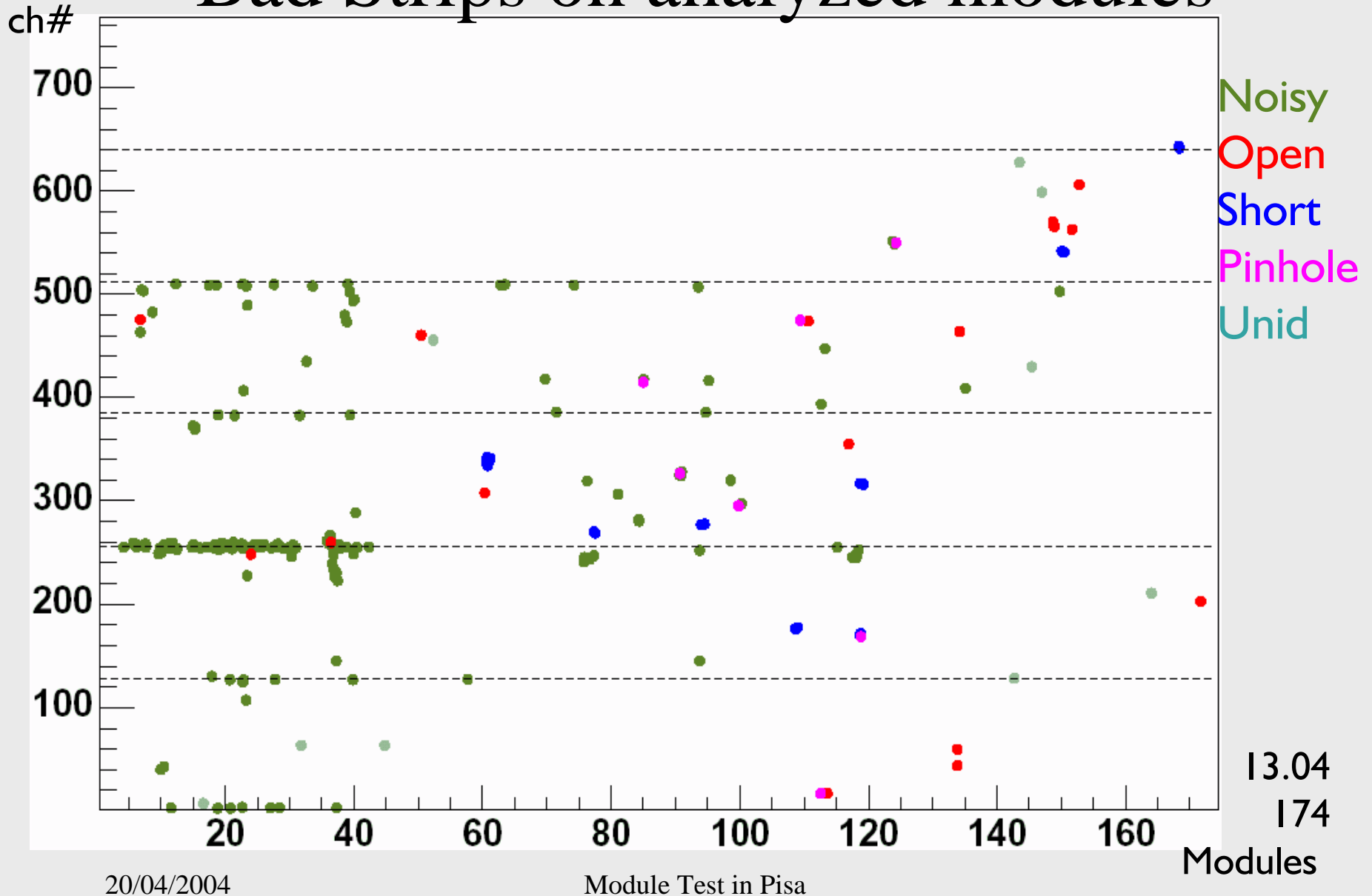
on Lyon Production DataBase

data read back from the DB:

no significant differences found with the original .root file data



# Bad Strips on analyzed modules



# ARC Results

219 modules received and tested

5 with bad IV (grade C)

1 with 9 ch consecutive short (grade B)

1 with (3+2) ch short & 1 pinhole (grade B)

Other grade B,C(7+2) due to noise, to be reassessed

174 modules analyzed with xflag:

(130x4APV + 44x6APV = 100352 channels)

Bad channels:

24 short/ 7 pinholes/ 16 open/164 noisy/ 9 unid

0.2‰ / 0.1‰ / 0.2‰ / 1.6‰ / 0.1‰

# Long Term Test



Problems with cooling  
now solved  
Hard disk crash repaired

Running with 6 modules  
reading current from 3/6  
(new electrometer will be  
working soon)

Will upgrade to 9-10 Modules  
(max capacity of Vienna Box)  
Just missing 3-4 VUTRI and  
some cabling

# Long Term Test

Basically no ARC-LT differences on 70 analyzed modules

6 open ch (ARC==LT) + 1 short ch (ARC==LT)

Some discrepancies on noisy channels

Investigating the DAQ failure of two modules  
that were OK in ARC (will be retested)

Working on the .xml production  
One .xml file uploaded in the Test DB

# Logbook

<http://www.pi.infn.it/~cmsmtest/logbook.html>

## CMS-Pisa Modules E-logbook

### Summary

Module by mod#	Reception	Optical Inspection	ARC Fast Test	Bonding	IV post BB	ARC Post Bonding Test	Passive Cooling	ARC Final DB Test	Long Term Test	Extra
<a href="#">30200020033001</a>	✓	⚠	✓	✓	✓	✓	✓	⚠	✓	--
<a href="#">30200020033002</a>	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033003</a>	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033004</a>	⚠	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033005</a>	✓	⚠	✓	✓	✓	✓	✓	⚠	✓	--
<a href="#">30200020033006</a>	⚠	⚠	✓	✓	✗	✓	--	--	--	✓
<a href="#">30200020033007</a>	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033008</a>	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033017</a>	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033018</a>	✓	✓	✓	✓	✓	✓	✓	✓	✓	--
<a href="#">30200020033019</a>	✓	⚠	✓	✓	✓	✓	✓	⚠	✓	--
<a href="#">30200020033020</a>	⚠	✓	✓	✓	✓	✓	✓	✓	--	--
<b># Tested</b>	219	219	219	218	219	219	217	217	70	--
<b>4 APV</b>	150	150	150	150	150	150	148	148	70	--
<b>6 APV</b>	69	69	69	68	69	69	69	69	0	--

Total of 219 modules (105/106/8)

# Summary

- 20% of the final production in Pisa achieved
- Excellent module quality and smooth bonding and testing
  - Still a lot of work ahead