

Activity on INFN GEM and preliminary analysis of cosmics data

30/September/ - 06/October/2020

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and Chuck Lung

Recent work on INFN GEM @ JLab

Ezekiel on site! Evaristo and Roberto remotely

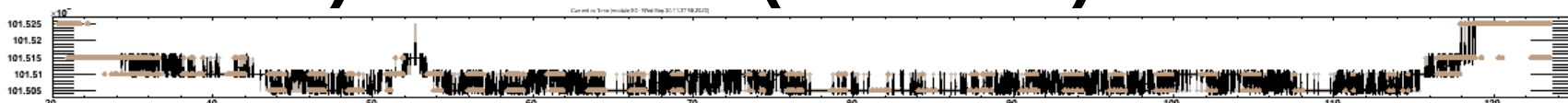
- 30/Set: Ramping HV up to 3000 V, no issue (N2 gas flowing since beginning of August thanks to Chuck)
- 01/Oct: started DAQ with some issues:
 - MPD7: one backplane disabled (bad histogram test and DAQ-timeout)
 - MPD18: whole MPD disabled (good histogram test, bad pedestals of first 4 cards, lots of timeouts)
 - we started cosmic at 4000V, gas flow $\sim 1/2$ nominal value
- 04-06/Oct: trying to fix DAQ issues:
 - checked backplanes with a spare one
 - swapped cables
 - replaced patch panels
 - measured LV levels
 - power cycled LV; ended up with: 3 cards disabled in MPD7; MPD18 apparently fixed (but still 8 cards do not show up hits !)

HV (4000 V) current (~90 h)

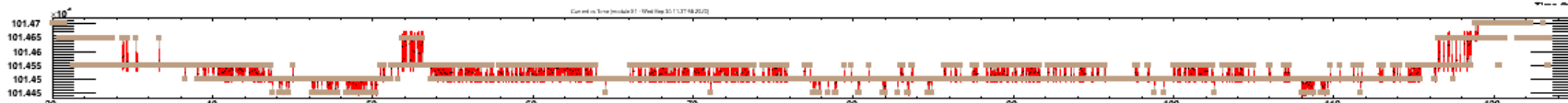
N2 and then ArCO2
~half nominal flow

nA

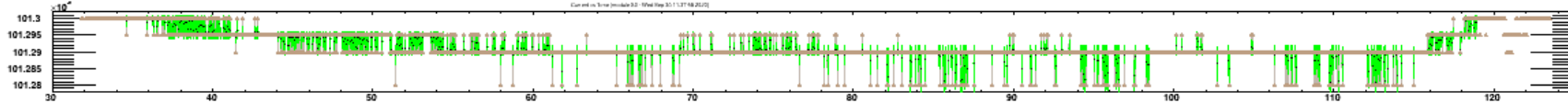
101507.9 +/- 3.2



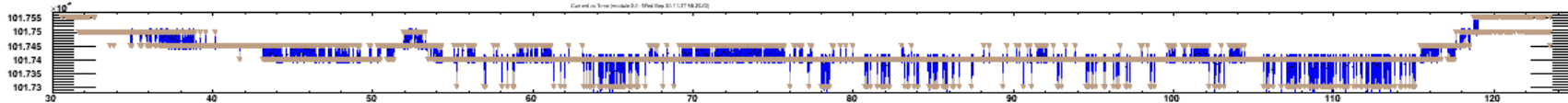
101451.5 +/- 3.1



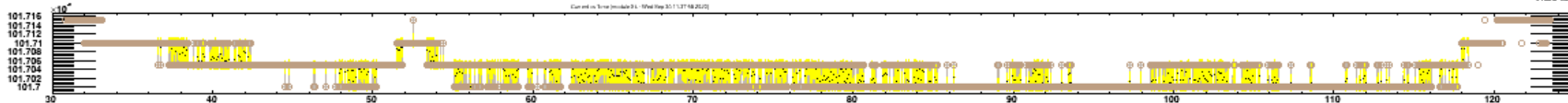
101291.4 +/- 3.2



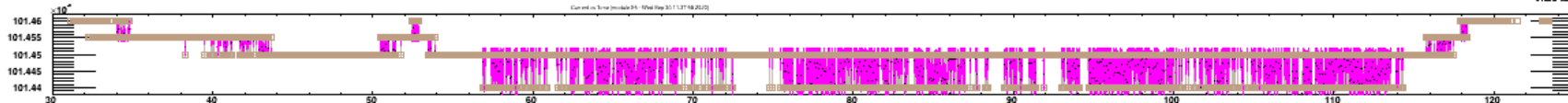
101741.4 +/- 3.3



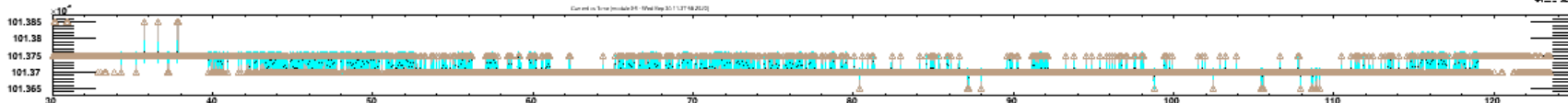
101703.2 +/- 3.2



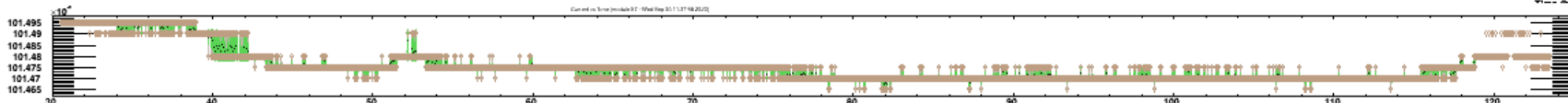
101449.3 +/- 4.5



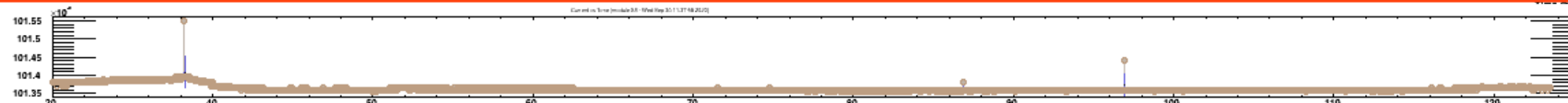
101371.3 +/- 2.2



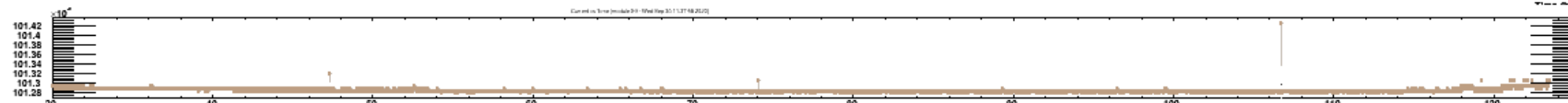
101474.5 +/- 6.0



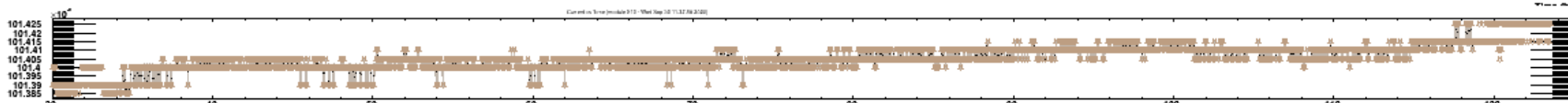
101362.3 +/- 7.1



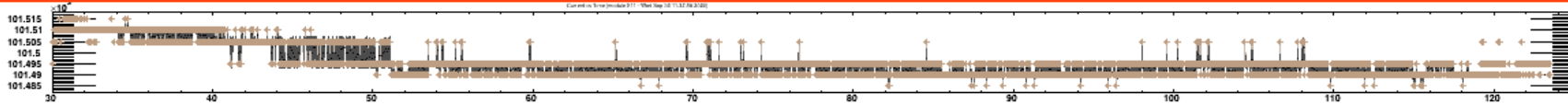
101285.4 +/- 2.6



101405.1 +/- 5.3

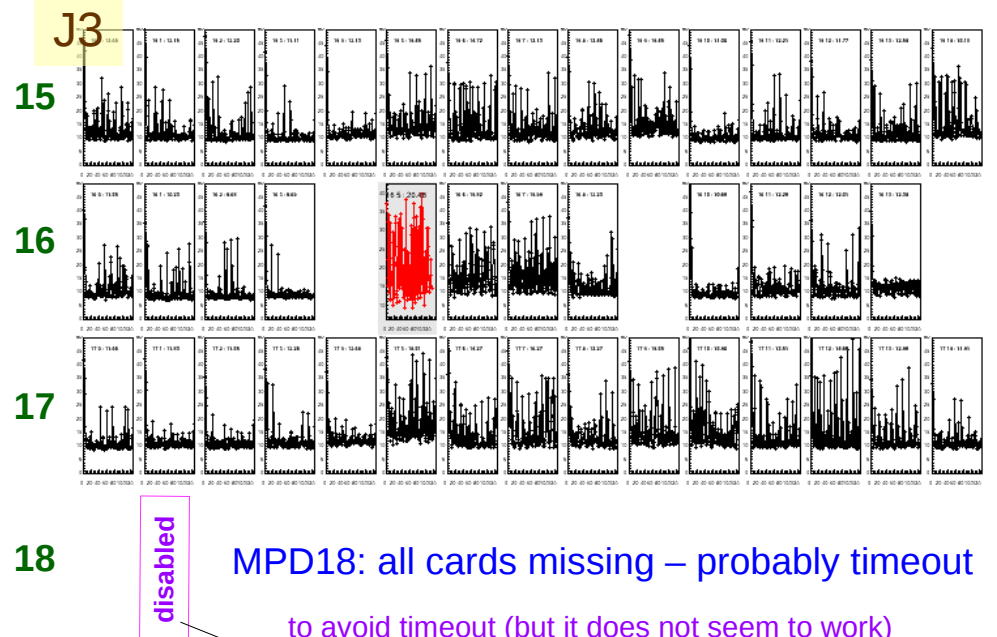
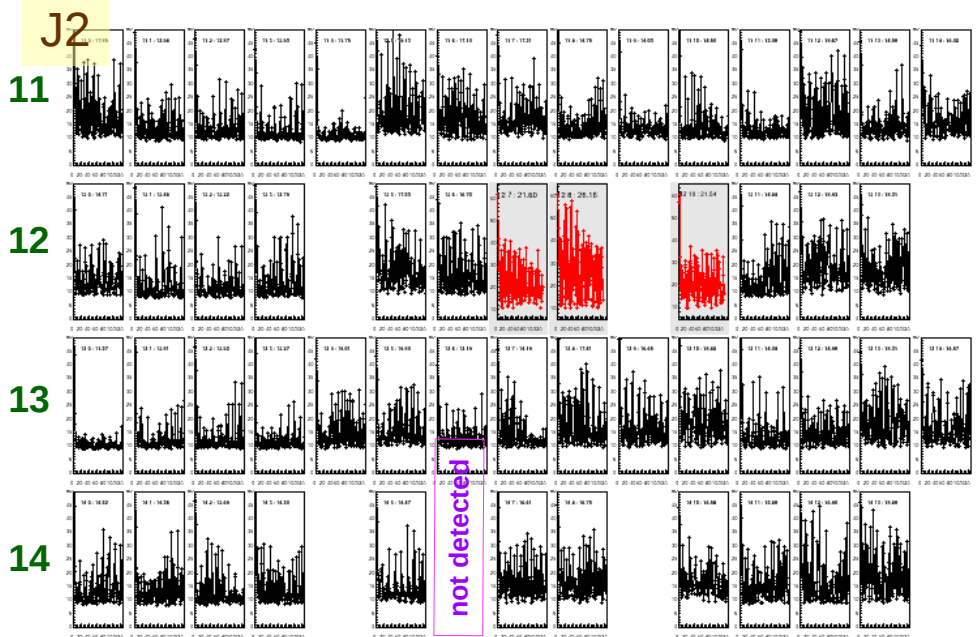
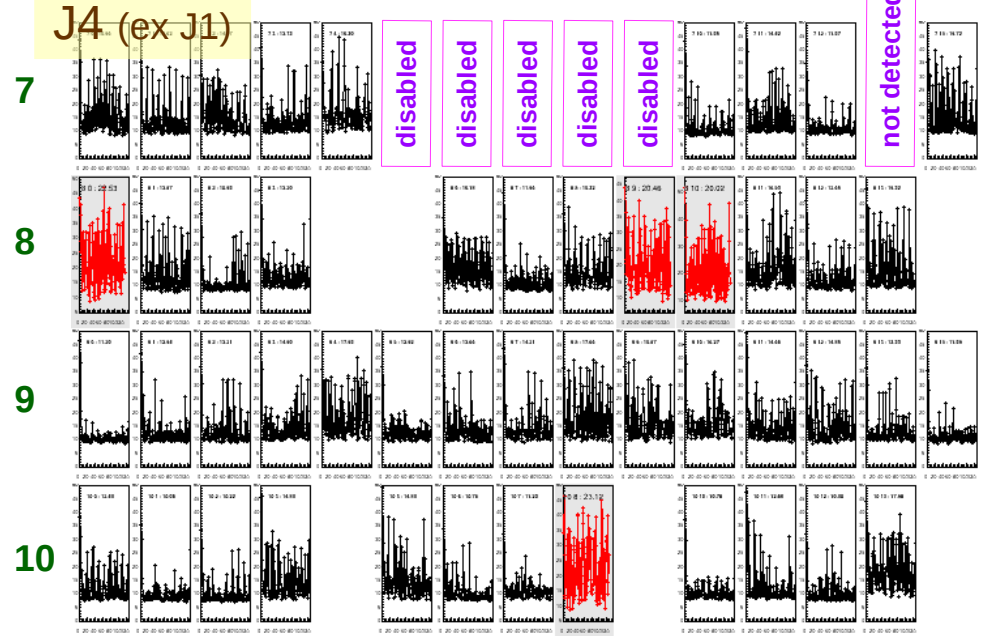
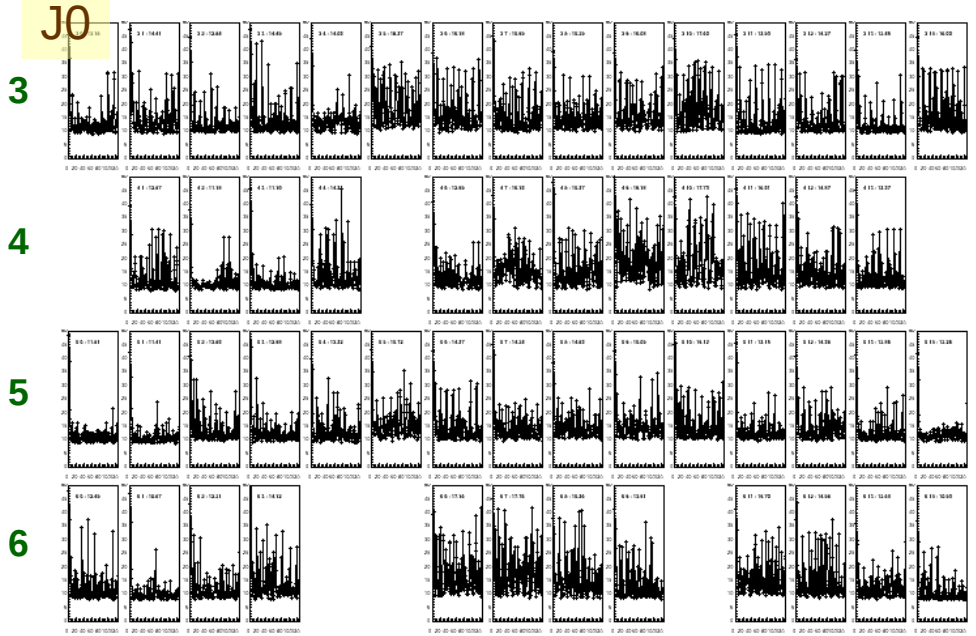


101494.9 +/- 5.5



Pedestal (from cosmic run 4558)

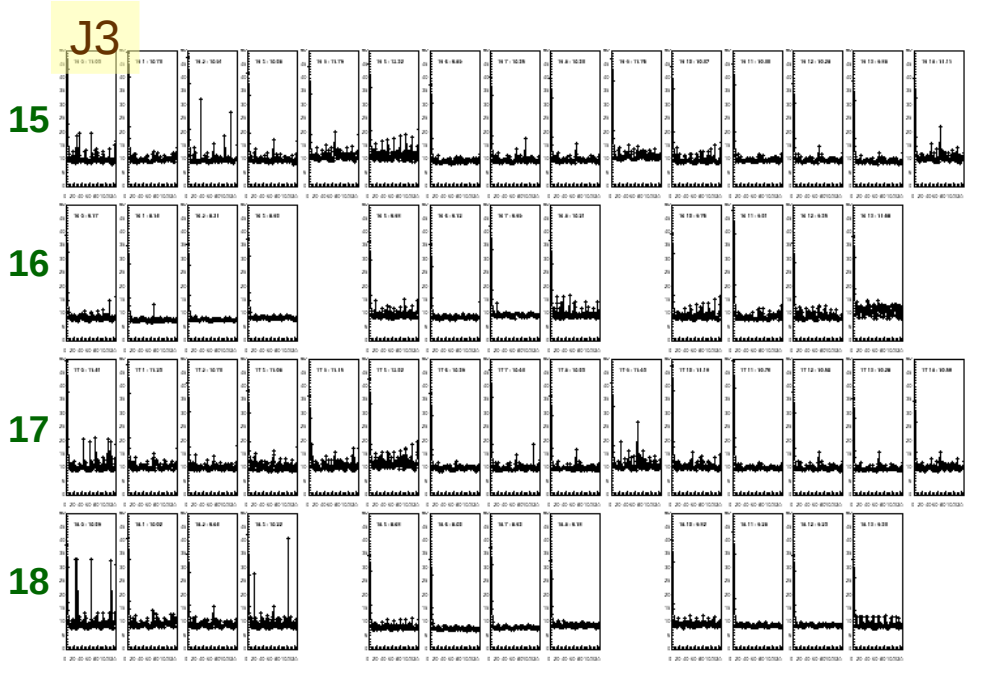
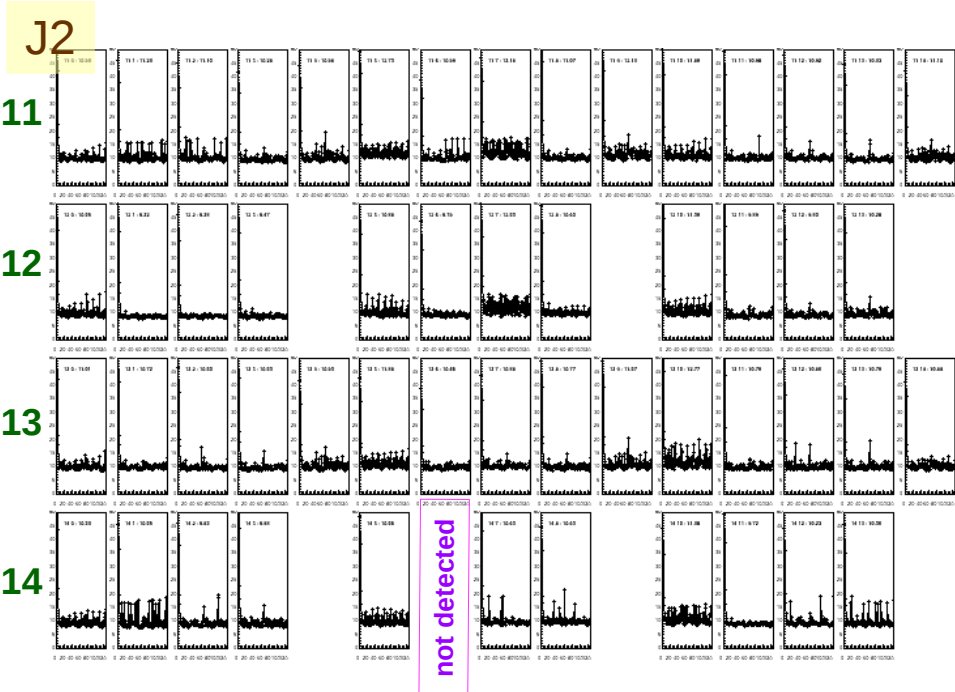
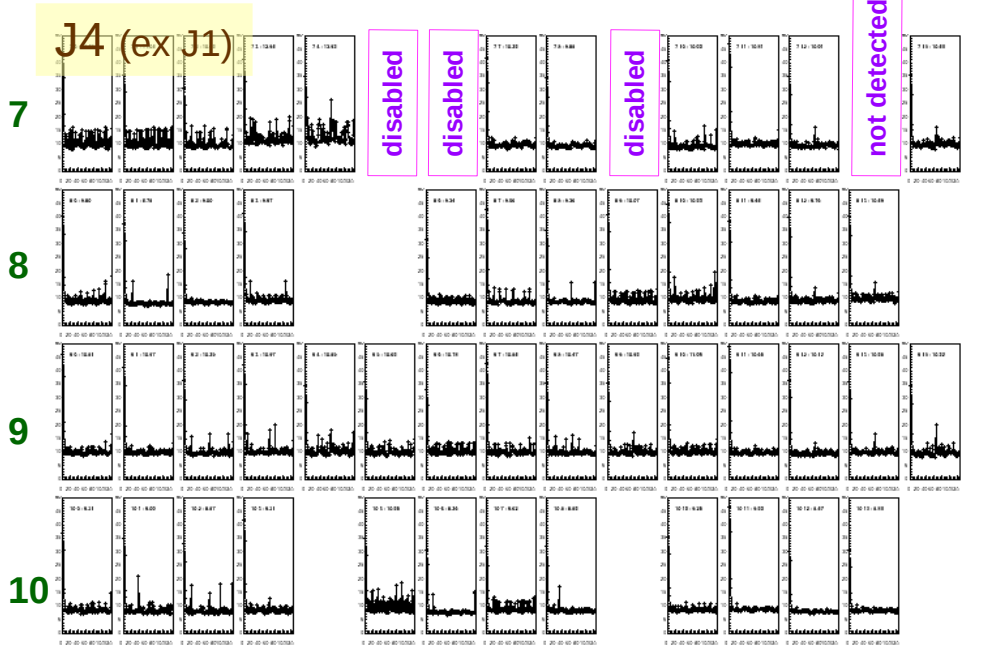
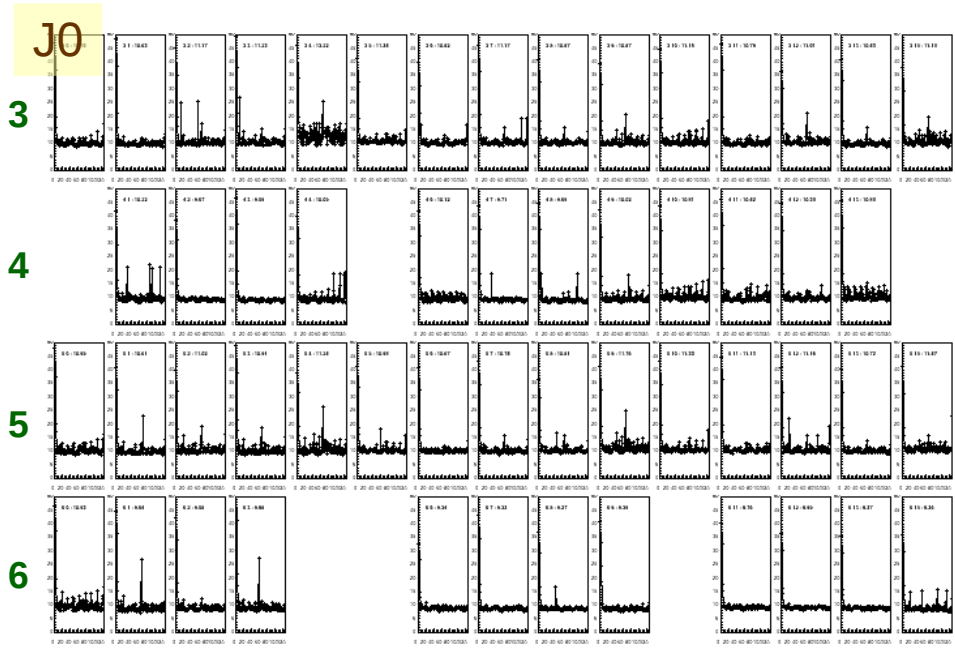
NOTE: DO NOT CARE ABOUT RED COLOR (this is meaningful in "true" pedestal run)



MPD18: all cards missing – probably timeout

to avoid timeout (but it does not seem to work)
no specific reason to disable this card then others

Pedestal (from pedestal run 4599)



Cosmic runs Dec/2019

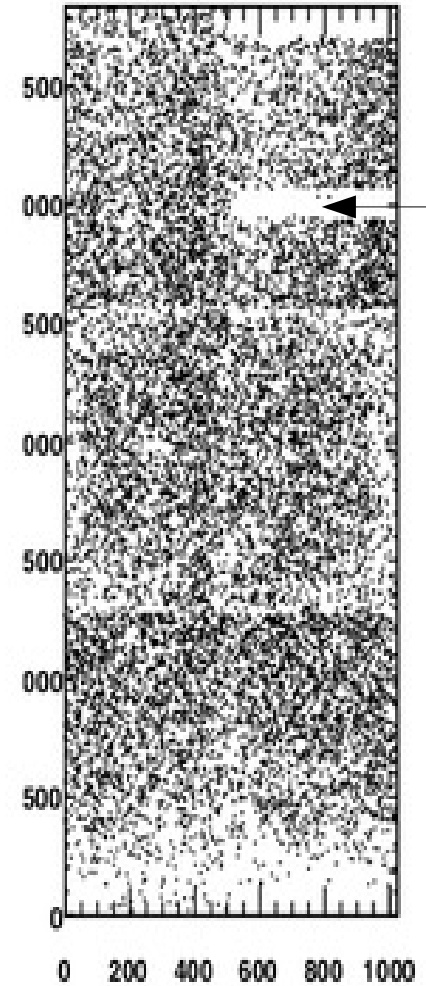
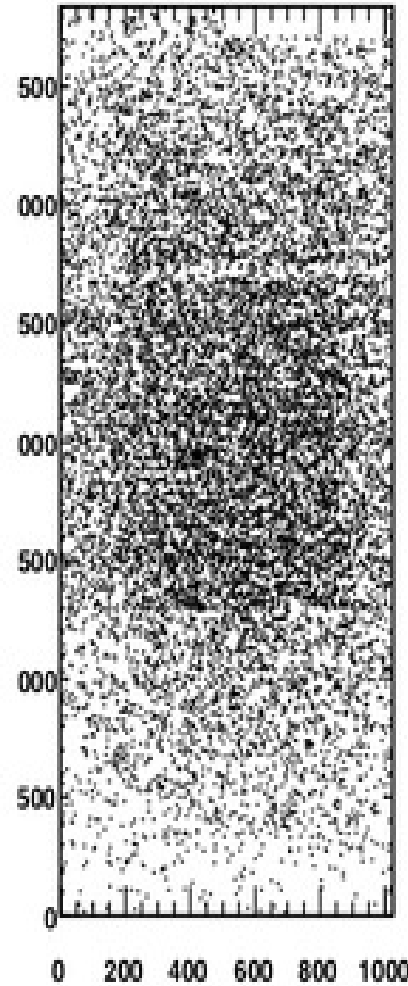
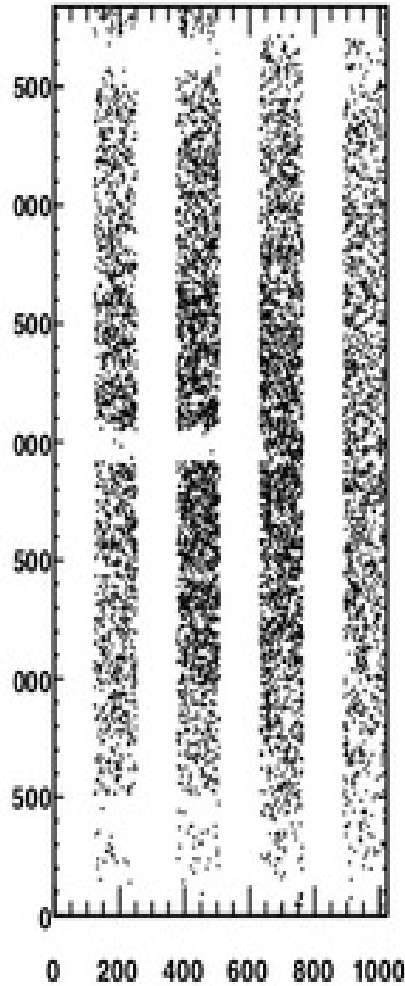
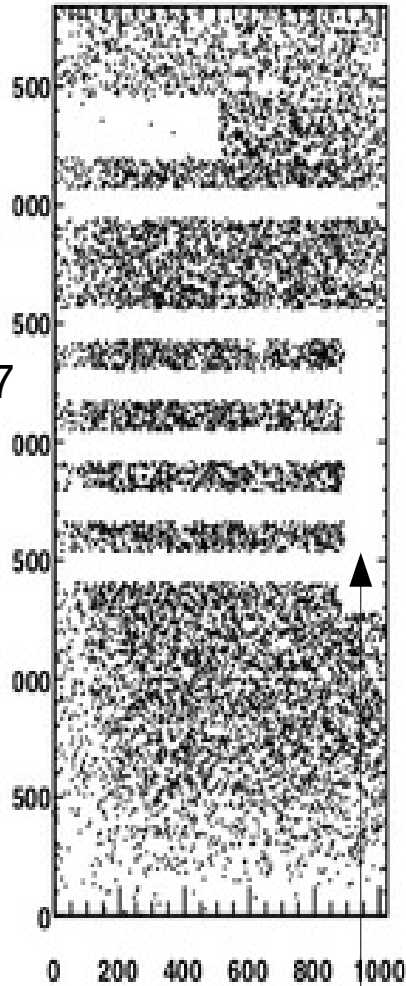
hcoy: x/y Chamber J4

MPD18

hcoy: x/y Chamber J0

hcoy: x/y Chamber J2

MPD07



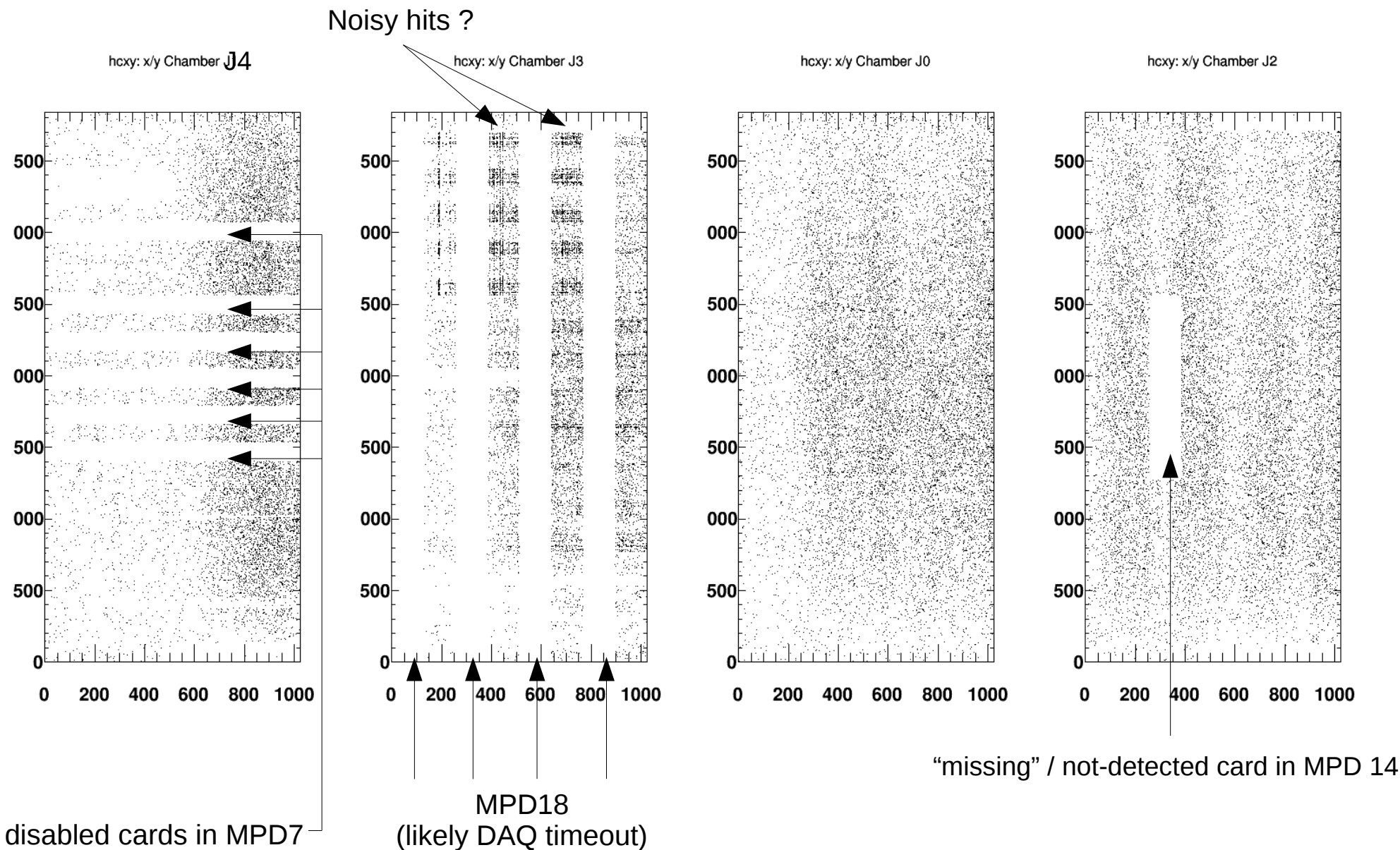
mapping in the decodere

Hit Map (cosmic run 4558)

(about 1 day statistics)

~5 Hz Trigger Rate

Use pedestal 4553 at HV=3000 V



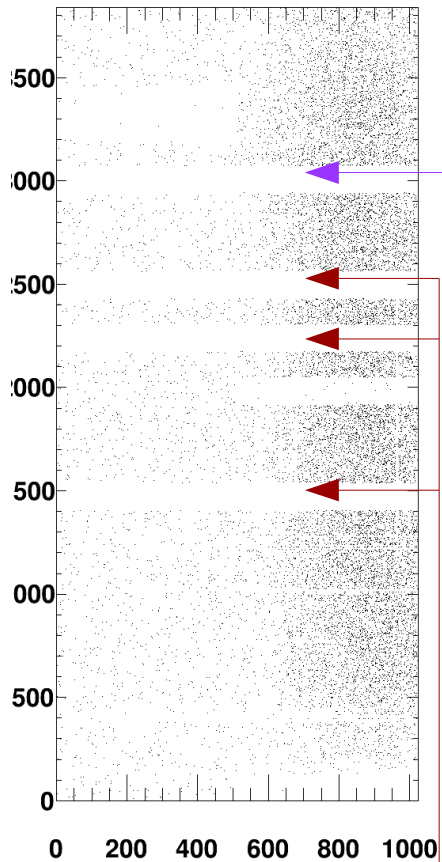
Basically identical to Dec/2019 (except one not-detected cards)

Hit Map (cosmic run 4602)

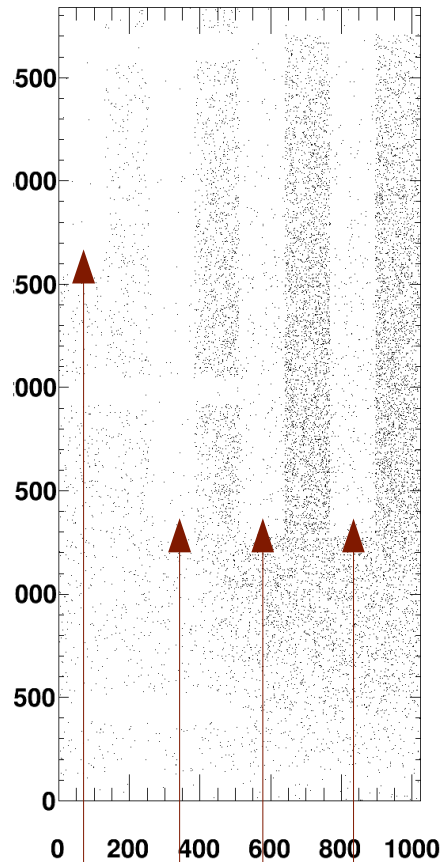
(statistics: files _50-59)
gas flow ~ 1/2 of "nominal" values

NOTE: use pedestal 4599 at HV=0 V

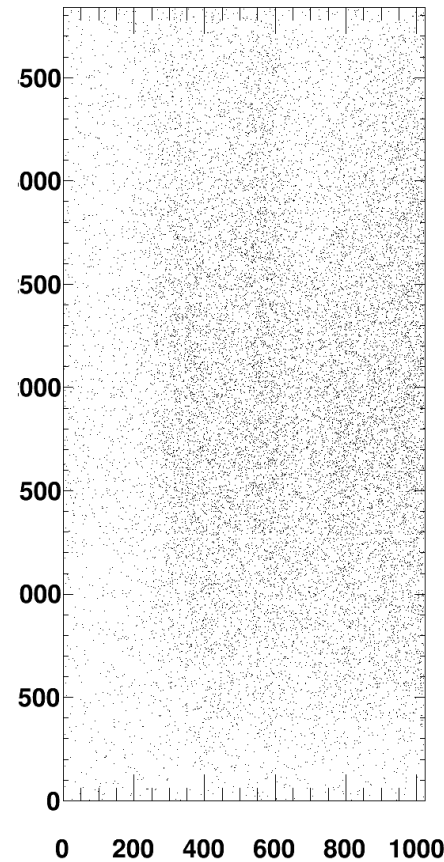
hcx: x/y Chamber J4



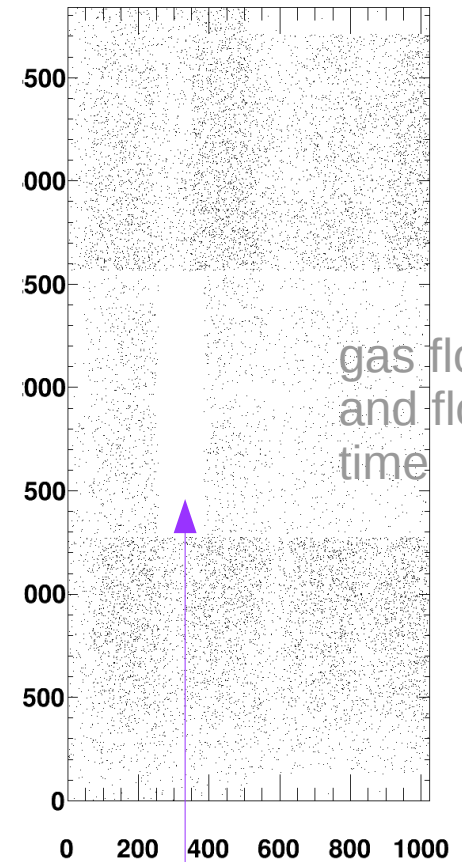
hcx: x/y Chamber J3



hcx: x/y Chamber J0



hcx: x/y Chamber J2



gas flow rate
and flowing
time

disabled cards in MPD7
bad histos, gives timeout
when enabled

histos ok, pedestals
questionable (?)
enabled in DAQ

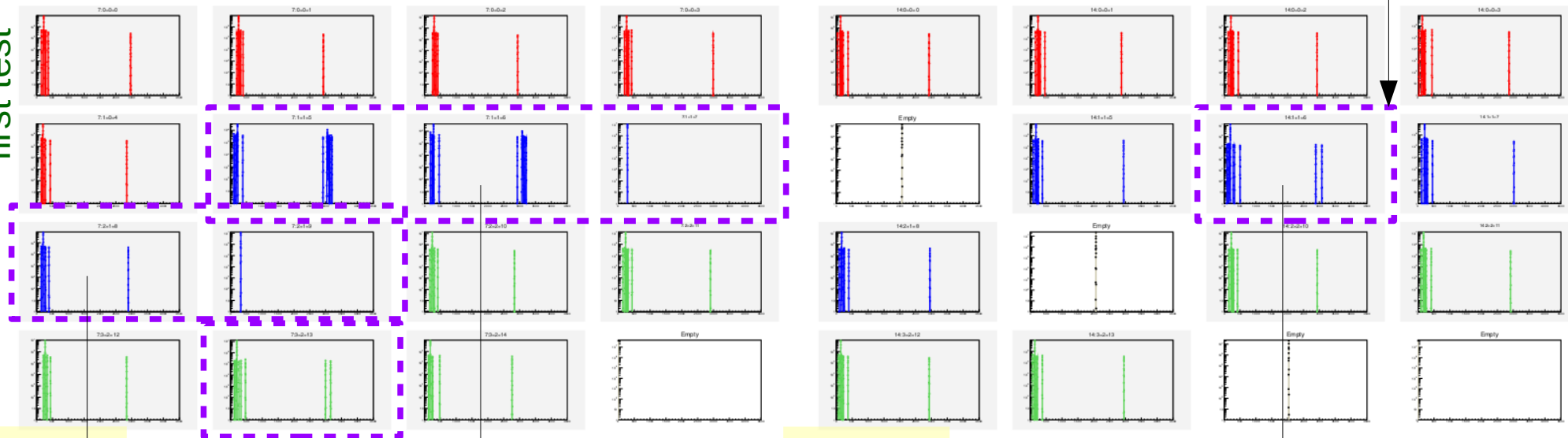
"missing" / not detected cards

Low Level Histogram Tests 1/1

disabled from DAQ

missing in ped and hits

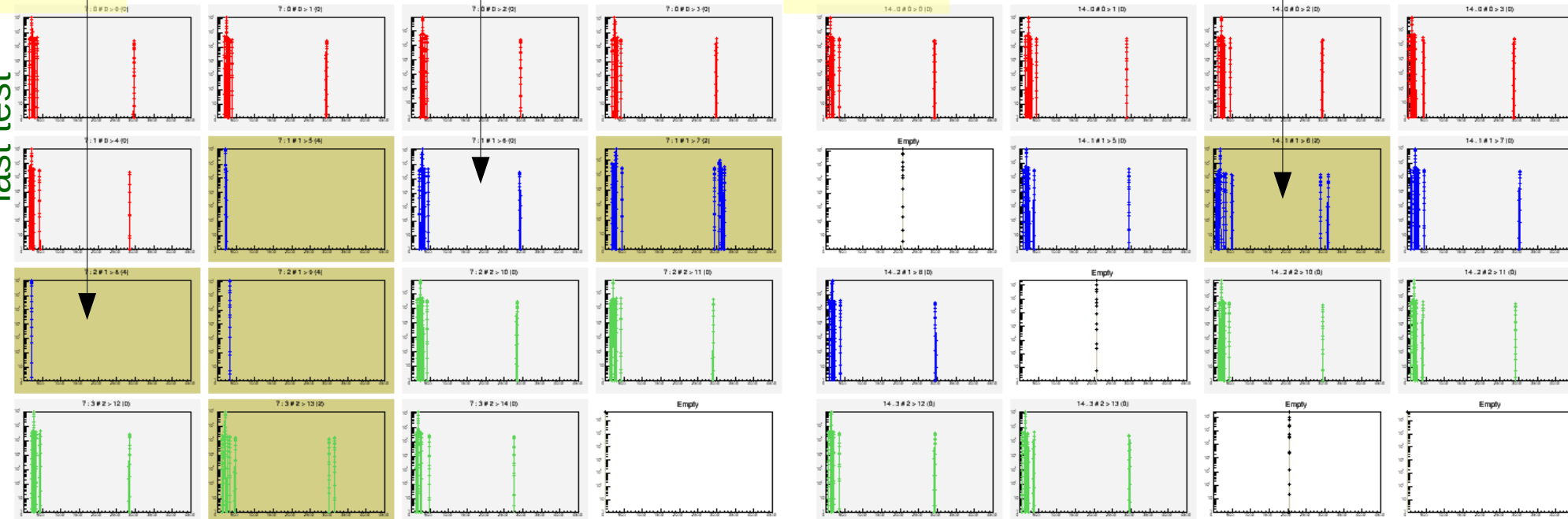
first test



MPD 7

MPD 14

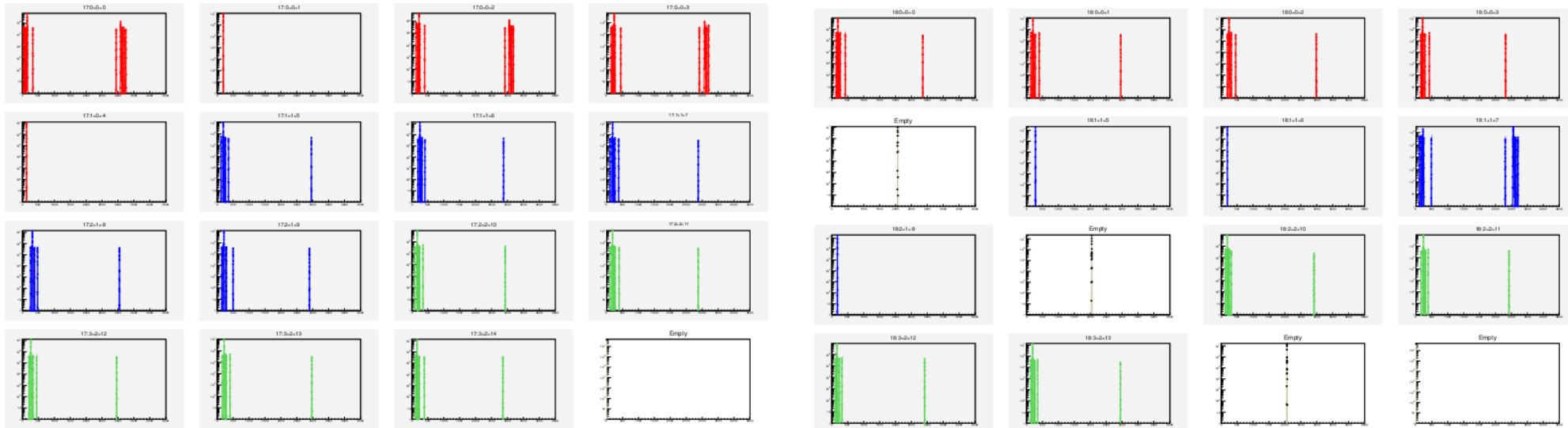
last test



“bad” cards in histogram test “move” in MPD7 - “missing” card in MPD14 is stable

Low Level Histogram Tests 2/2

first test

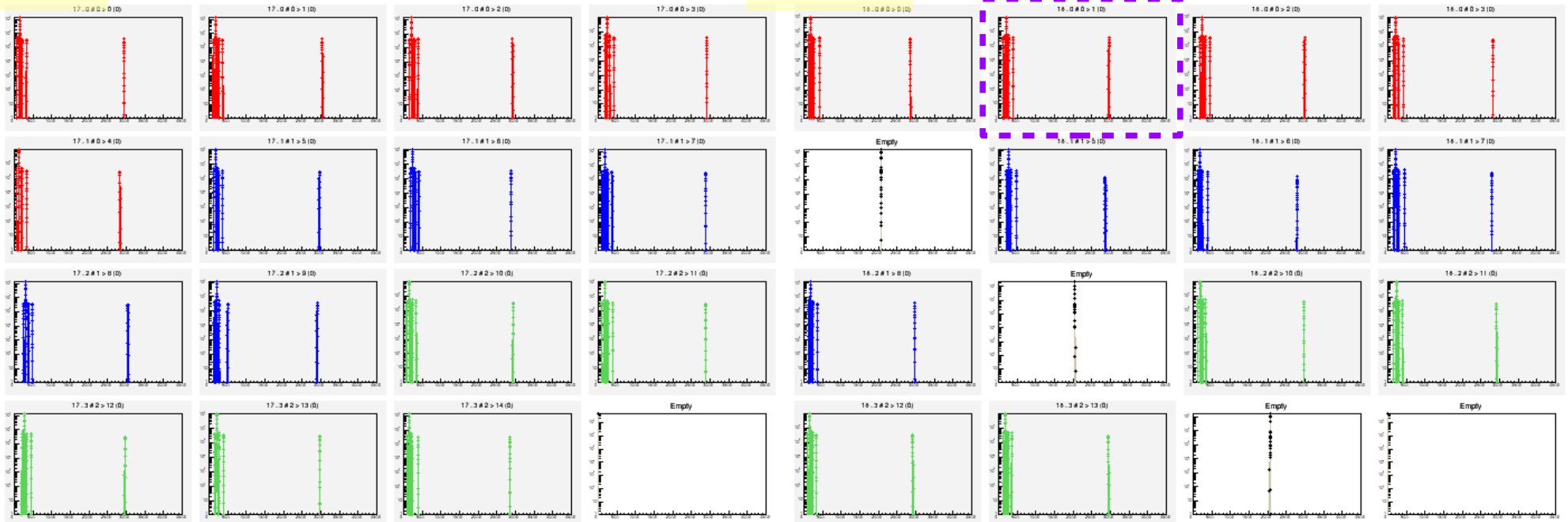


MPD 17

MPD 18

disabled from DAQ

last test



All cards looks fine in histogram tests after “blind” switching HDMI cables and power cycle LV