

# FT GEM commissioning

Evaristo

- Status of electronics / before-after new cabling
- Suggested plan

After a remote discussion with Leonard, Paolo and Roberto (on Friday 06/Apr)

# Testing/DAQ phases

----- use mpplib / no CODA -----				----- CODA -----					
----- Components -----				Configuration	Histo Test	Internal Pulse Test (not avail. at <u>JLab</u> , yet)	Pedestal	Full Acquisition (e.g. Cosmic)	
GEM								X	
Flat terminal							(part)	X	
APV Card				X	X	X	X	X	
Backplane				X	X	X	X	X	
Short Cable	Analog Line				X	X	X	X	
			Trigger Line			X	X	X	
				Clock Line		X	X	X	X
				I2C Lines	X	X	X	X	X
Patch Panel	Analog				X	X	X	X	
			Digital		X	X	X	X	X
Long Cable	Analog Line				X	X	X	X	
			Trigger Line			X	X	X	
				Clock Line		X	X	X	X
				I2C Lines	X	X	X	X	X
MPD	MPD Analog IN				X	X	X	X	
			ADC circuitry			X	X	X	X
		Digital I/O		X	X	X	X	X	
		VME Interface		X	X	X	X	X	
		Readout logic			(part)	X	X	X	

«x» means that if the test fail the corresponding component does not work properly  
 NOTE: each testing phase has diagnostics that may permit to identify the faulty component.

# FT GEM status before new-cabling

Chamber	MPD	#Cards	Config	18/03/13 Histo-test	18/03/23 Cosmic Test
0	4	15	ok	ok	ok
0	5	12	ok	ok	noisy ?: GEM 0 / strip 128-255
0	6	15	ok	adc=5 bad	off: GEM 1 / strip 0-127
0	7	12	ok	adc=13 bad	masked ?: GEM 2 / strip 0-127, 256-383, 512-639, 768-895
1	8	15	ok	ok	ok
1	9	12	ok	ok	off: GEM 2 / strip 128-255, 384-511, 640-767, 896-1023, 1152-1279
1	10	15	ok	ok	off: GEM 1 / strip 0-127
1	11	12	ok	ok	off: GEM 2 / strip 0-127
2	12	15	ok	adc=6 "0 level" not optimal	off: GEM 0 / strip 128-255
2	13	12	ok	adc=5 bad, adc=8 "0 level" not optimal	off: GEM 1 / strip 896-1023
2	14	15	ok	ok	off: GEM 0 / strip 0-127
2	15	12	i2c=8	ok, except i2c=8 (adc=5)	off: GEM 1 / strip 0-127

- Note: histo test on 03/13 and cosmic on 03/23 could correspond to slightly different electronics configurations.
- Histo test: **4 cards out of 162 did not pass the test, additional 2 show not optimal ADC distributions**
- Cosmic preliminary: **12 cards out of 162 have been masked in DAQ, 4 in the software analysis (?), one looks noisy;**  
Note: Geometrical mapping not validated yet!

# After new cabling

- DAQ condition looks different (worse) than before (expected the opposite)
- 5 MPD apparently do not discover and configure the cards anymore.
  - We believe this is very-very unlikely; the reason is probably related to cabling (either digital cables not properly plugged or wrongly connected)
- Some of the analog-patch panels have been bypassed by some HDMI «I» connectors:
  - Note that the analog-patch panel reroute the last (5th) analog (not-standard) line of the short HDMI cable to a standard line of the long HDMI cable.
  - If the analog-patch panel is bypassed, some cards cannot be readout; mapping must in any case be modified.
- MPD Time out: this is generally related to:
  - CODA issue (fixed before new cabling)
  - missing trigger in the APV (problem in the Trigger-line)
  - bad APV-ADC histogram (problem in the analog line) -> histo test

# Suggested short term plan

- Consolidate analysis of the existing data – **PLEASE SWITCH ON triton** (and possibly sbsvme20) and keep it on; otherwise I have no access to recent data and logs
  - Move HV CAEN Module(s) on the mini crate (better to have DAQ separated from Slow Control: VME bus interference between HV CAEN and MPD unlikely but not excluded – we add some issues in the past)
  - If Danning (or any expert on MPD readout) is around, he could (in contact with Evaristo/Paolo):
    - Test «faulty» MPDs
    - Double-check cabling and run additional tests
- We need to restore the same (at least) DAQ condition that we had before the «new cabling»**