4 Plane MUX Box Checkout

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Pre-Light Leak Check

- The MUX Box expert should examine the cable routing job done by the crew for each plane.
  - Look for cables routed incorrectly – braided cables, places where the prescribed method wasn't followed
- Look at the rubber bands for any that are over the connector lip, tucked under themselves, or curled up on the box
- Hook up the front end boards and the HV cables to both the box and the crates
- Update the Plex and HV databases

Light Leak Check

- We have used the following procedure since August
  - Hook up HV to the middle PMT and IU analog readout board to the stacker connectors
  - Take the dynode out from the board and connect it to an oscilloscope, which is connected to a frequency counter through the TTL output.
  - Ramp the HV up to near operating level
  - Shine a large flashlight (4D cell, krypton bulb) around all the connectors looking for jumps in the frequency counter rate
- We tested the procedure both with the rubber bands on and off and with a shop light about 6” away from the connectors.

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Test Results

HV	Frequency Band On (Hz)[noise]	Frequency Band On, Light (Hz)[noise]	Frequency Band Off (Hz)[noise]	Frequency Band Off, Light (Hz)[noise]
-600V	0	0	0	0
-625V	0	0	0	0
-650V	0	0	0	0
-675V	0	0	0	0
-700V	10	<10	10	<10
-725V	20 [20]	20 [20]	20 [20]	20 [20]
-750V	160 [20]	200 [20]	180 [20-30]	280 [50]
-775V	1000 [50]	1280 [50]	1200 [50-80]	1600 [100]
-800V	3700 [100]	3900 [100]	4100 [100]	5000 [200]

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Light Leak Check

- We would like to implement the following procedure using the DAQ for only the 4 planes in the set
  - Ramp the HV up from -600V to operating voltage in steps of –50V
  - At each step take a 10 sec run and look at the results using the online monitoring – probably the VAChip histogram would be the best to look at
  - Turn off the HV between runs to ensure that the PMT's aren't overloaded if there is a leak
  - Take one additional run at operating voltage with a shop light within 6 inches of the connectors to find any small leaks

Documentation

- You can find the documentation for all the MUX box check out procedures at

  http://beaker.astro.indiana.edu/brebel/far_documentation/

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