



# U.S. DAQ Systems Status Update

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*CMS Tracker Week – October 2004*



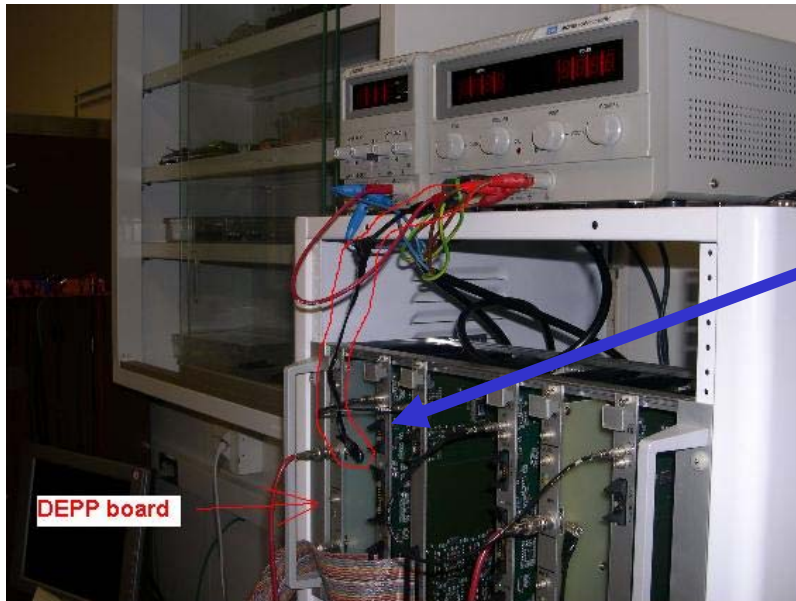
# General News

- **Both groups taking advantage of pause in production to concentrate on DAQ systems.**
- **The main focus is to bring the multi-rod systems into reliable working states.**
  - **Recent milestone at FNAL.**
- **Wim Beaumont was registered as a FNAL User and provided with a cryptocard for remote access**
  - **Has been helping with single and multi-rod system.**
- **Ryan Hooper and Jim Lamb recently participated in the test beam activity at CERN.**
- **Personnel changes**
  - **Yuri Gotra (Rochester RA) is now working on the multi-rod system at FNAL.**
  - **Kenan Sogut returned to Turkey to complete his degree.**
  - **Chris McGuinness now in charge of LT module system at UCSB; Jingtian Yu working on automation of LT module data qualification.**
  - **Patrick Gartung took a job on the CMS Forward Pixel project,  
But is physically present at FNAL.**



# ARC\* Systems

**\*Important for comparison with DAQ systems.**



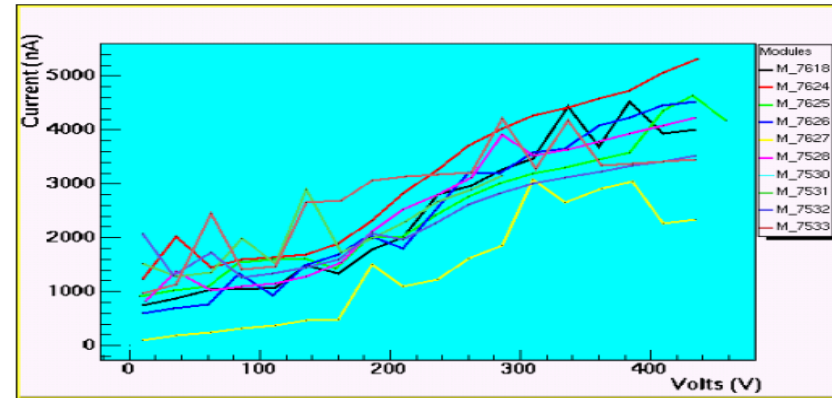
Grounding Strap Circled in Red

- **Both FNAL and UCSB benefited from visits by Mariarosaria D'alfonso (Pisa) in August.**
  - Long-standing noise problem with DEPP boards resolved at UCSB.
- **Upgrading to ARCS 7.2bugfix has resolved a PC dependence issue at FNAL with 7.2 alpha.**
  - Only one out of four systems trouble-free under 7.2a
- **With 7.2bf we are now uploading for the first time XML files to the production Database.**
  - Important for Defect Analyzer.



# LT (Vienna) System Progress

- **Upgraded from CCU6's to CCU25's**
  - Appears to have helped with readout failures at low temperature.
- **Replaced ADC board at FNAL**
  - Smoother IV curves



- **At FNAL we were able to replace the CERN RedHat OS with FNAL RedHat (7.3)**
  - Important for connectivity and support by FNAL computing division.
- **Timing studies at UCSB:**
  - Can test 16 modules per day; 1 module/hr for >8hr shifts
  - Will eventually need to go to LT sampling when >5 assembly plates per day.



# LT: Still To-Do List

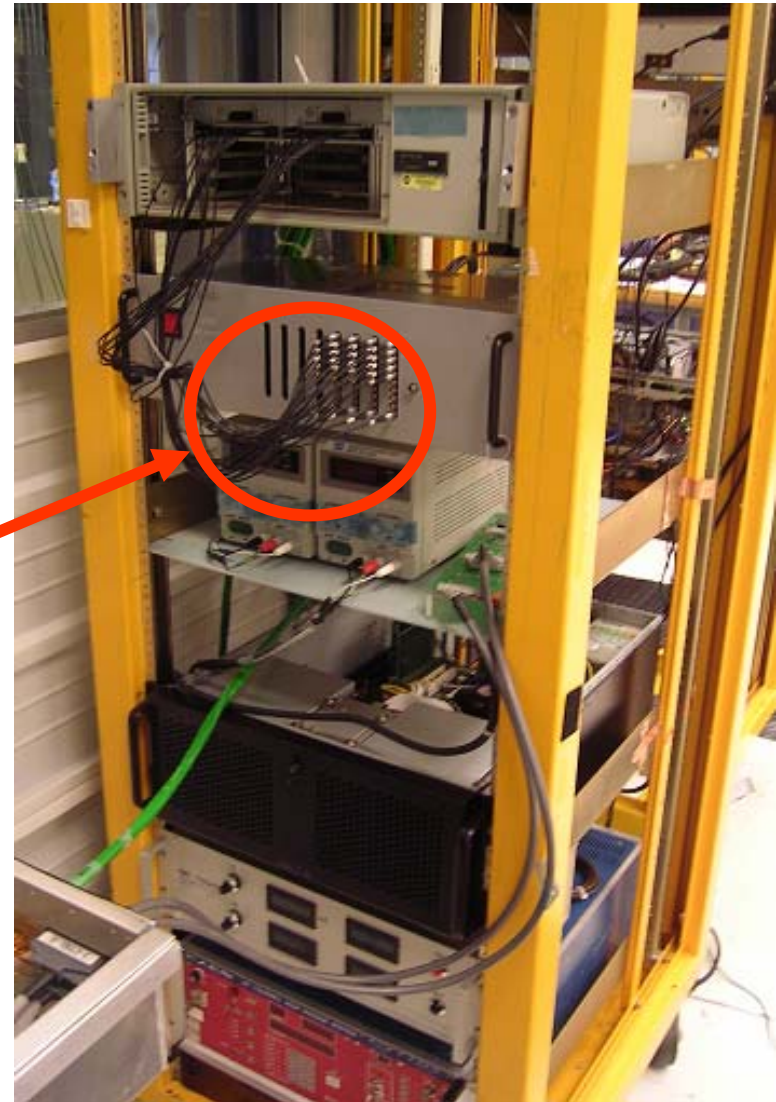
- **Vienna box backplane extension**
  - Modification to eliminate bent pin problems.
  - Done at UCSB but still needs to be carried out at FNAL.
  - Appears to have reduced stability issues at UCSB.
- **2 more NIM2LVDS to increase BackPlanePulse capability from 8 to 10 modules.**
- **Occasional loss of contact with CAEN systems during extended (3-day) scenarios.**
  - Voltage usually stays frozen at 400V.
  - Suspect that a bad sequence is being sent to CAEN controller.
  - Same problem observed in multi-rod system at FNAL.
- **Running the DefectAnalyzer program on LT and ARC data stored in the Tracker Database.**
  - Working on auto-upload of good XML data at UCSB





# Single Rod Systems

- **Running reliably at both sites.**
- **$C_6F_{14}$  cooling implemented at FNAL but will be replaced with a different cooling system.**
  - Both groups concerned about loss and expense of  $C_6F_{14}$ .  
**One drum/month/site?**
- **Requires 6 MUX's per system to avoid recabling for different rod types.**
  - Similar issue for multi-rod systems.
  - Request made for more MUX's  
**Tony: Just received 5 of 12 MUX from Karlsruhe.**





# Multi Rod systems

- **Recent breakthrough at FNAL**
  - **Able to run 4 SS4 rods in 3 day scenario**
  - **Ricardo Eusebi found that TimeTune was working properly and this has since been fixed by Wim.**
  - **Other problems were addressed earlier by Wim.**
- **Still need to solve similar problems for SS6 and DS rods.**
  - **Jim Lamb recently sent us new code for LaserTune. TimeTune still seems to have a problem with SS6.**
- **16 MUX (per site) needed to avoid re-cabling for different rod types.**





# Rod Exercise at FNAL

- **Assemble and test 10 rods:**
  - 6 SS6 with ST qualification modules
  - 4 SS4 with pre-qualification modules
  - Limited to L-type rods due recently discovered problem with one module position on H-types.
- **Final gluing of cables to carbon fiber frames after multi-rod testing**
- **Single-rod testing with  $C_6F_{14}$  at 18°C**
- **Multi-rod testing based on one FED**
  - Up to 6 SS4 rods
  - Up to 3 SS6 rods
    - **Still dealing with SS6 timing issues.**
- **Ship the SS4 rods to CERN in November as a test of the recently engineered bus restraining hardware.**