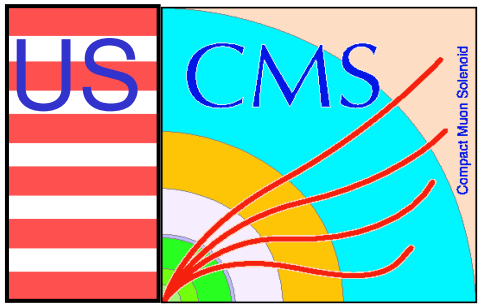
Some Preliminary Test Beam Results



T. Ferguson, N. Terentiev*, I. Vorobiev

CMS EMU Meeting

Fermilab

Oct 29 - 30, 2004

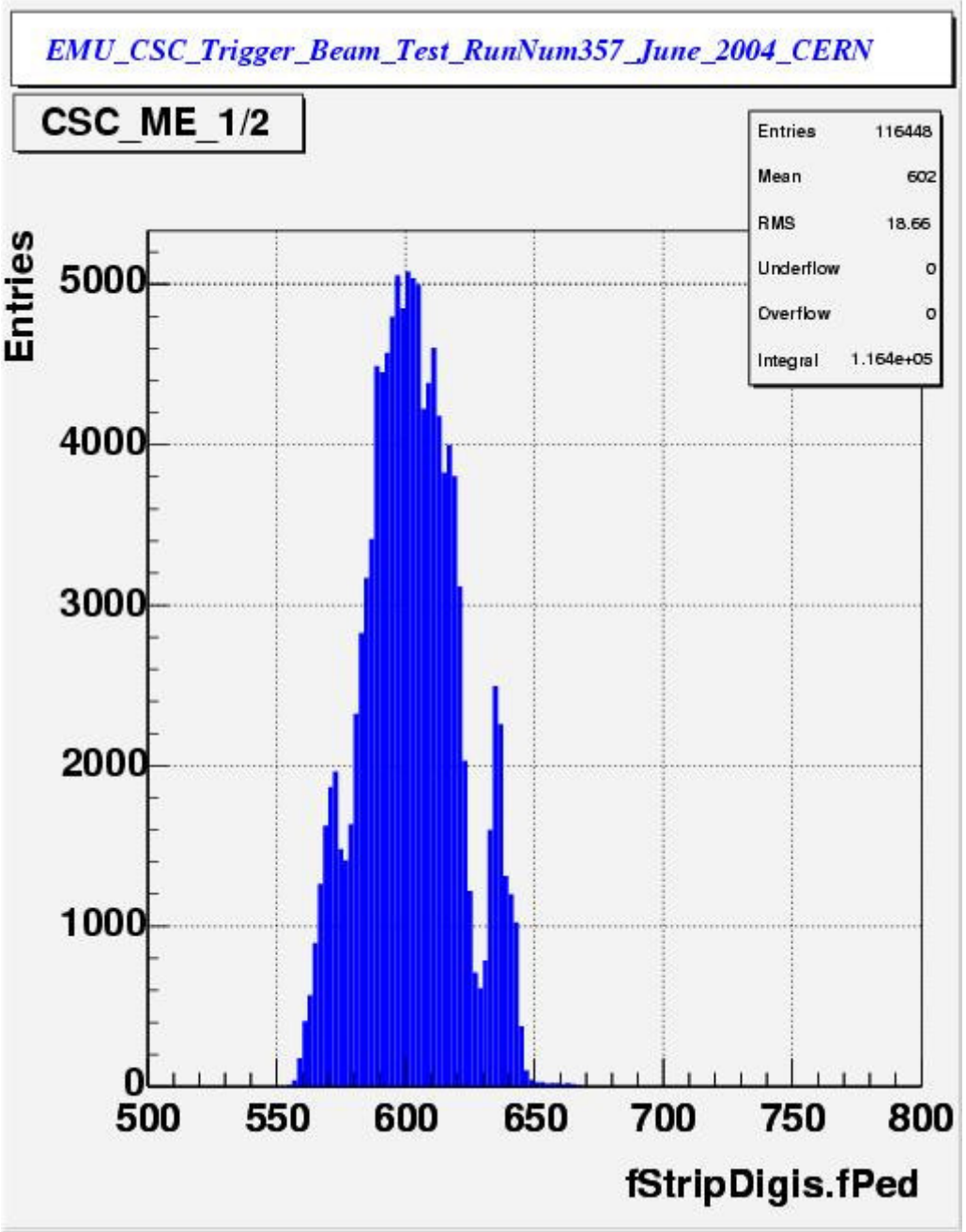
Outline

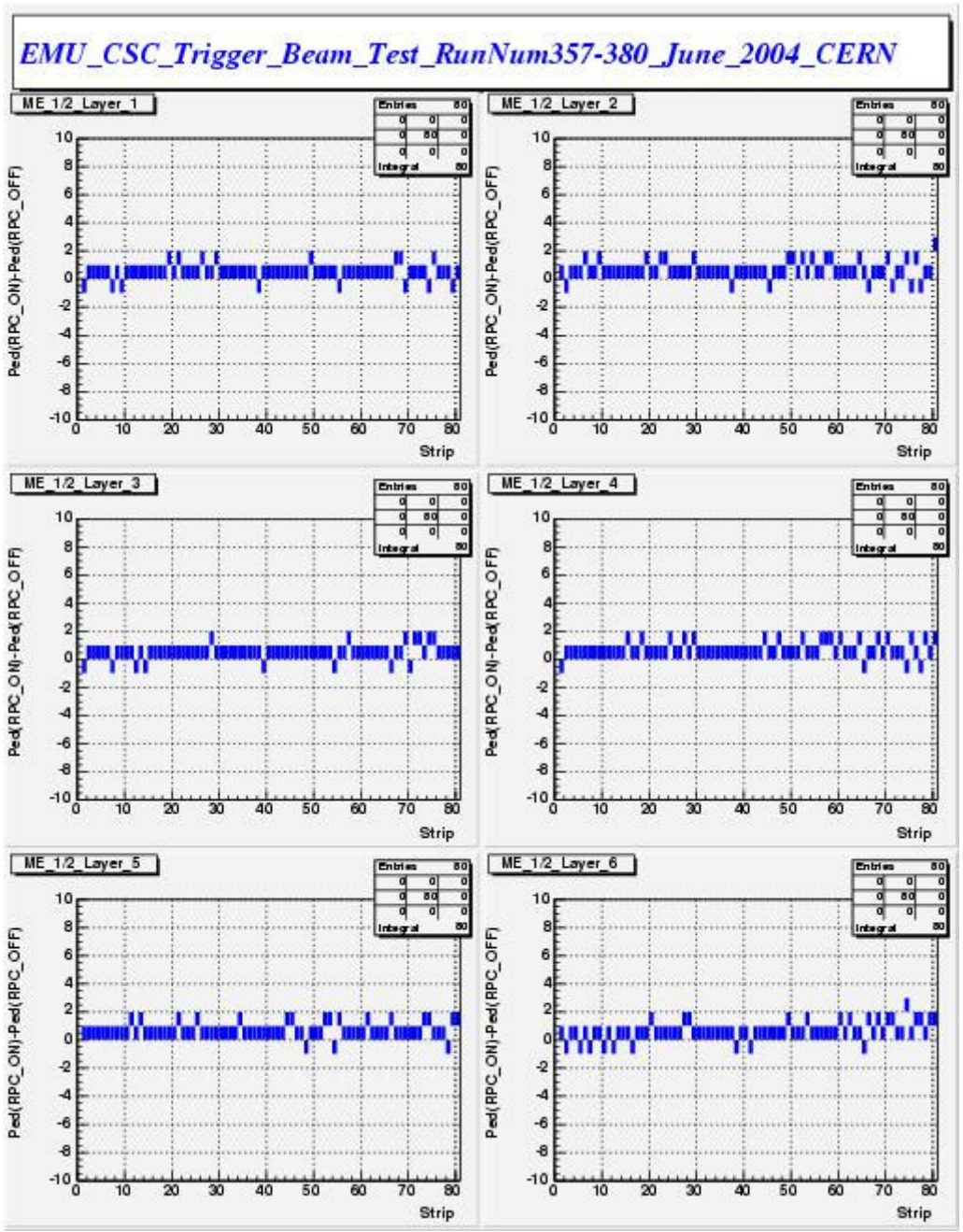
- RPC impact on CSC in the June ‘04 test
- Installation and use of the GRID client for file transfer from CERN to Fermilab
- Selecting Oct. ’04 test beam runs for analysis
- Raw data efficiency in Oct. ’04 test beam (preliminary)
- Plans

RPC impact on CSC in the June '04 test

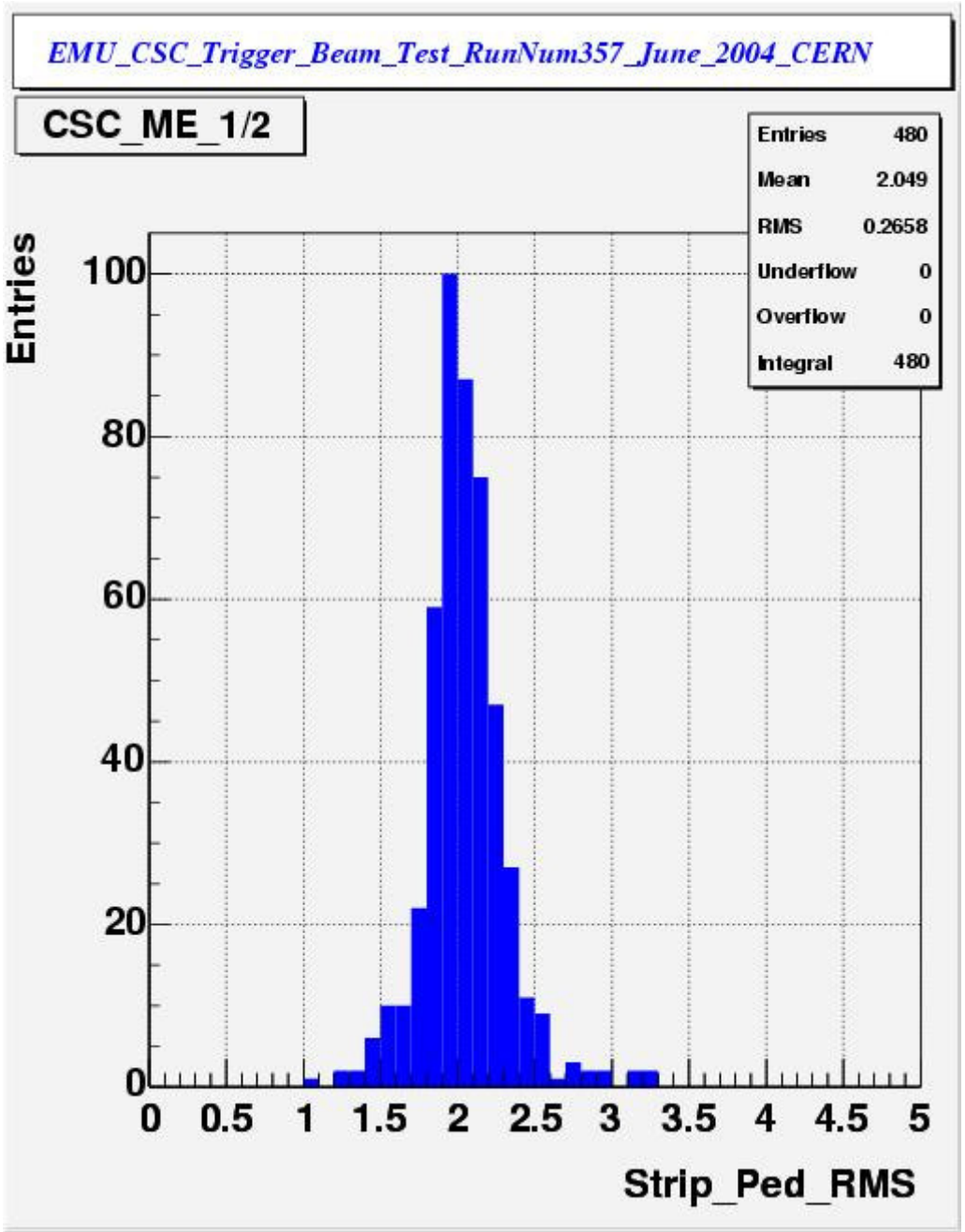
- **RPC and CFEB pedestals**
  - One RPC RE1/2 was installed onto the ME1/2
  - RPC data were included into the data path via TMB and RAT (RPC and ALCT interface card)
  - Look at ME1/2 CFEB pedestals and their RMS to see any impact of RPC on CSC
  - Compare two runs with RPC HV OFF/ON and identical CSC conditions ?
  - No such runs but there were runs with similar CSC conditions (Run 357 with RPC data vs Run 380 with RAT removed, RPC HV "OFF")

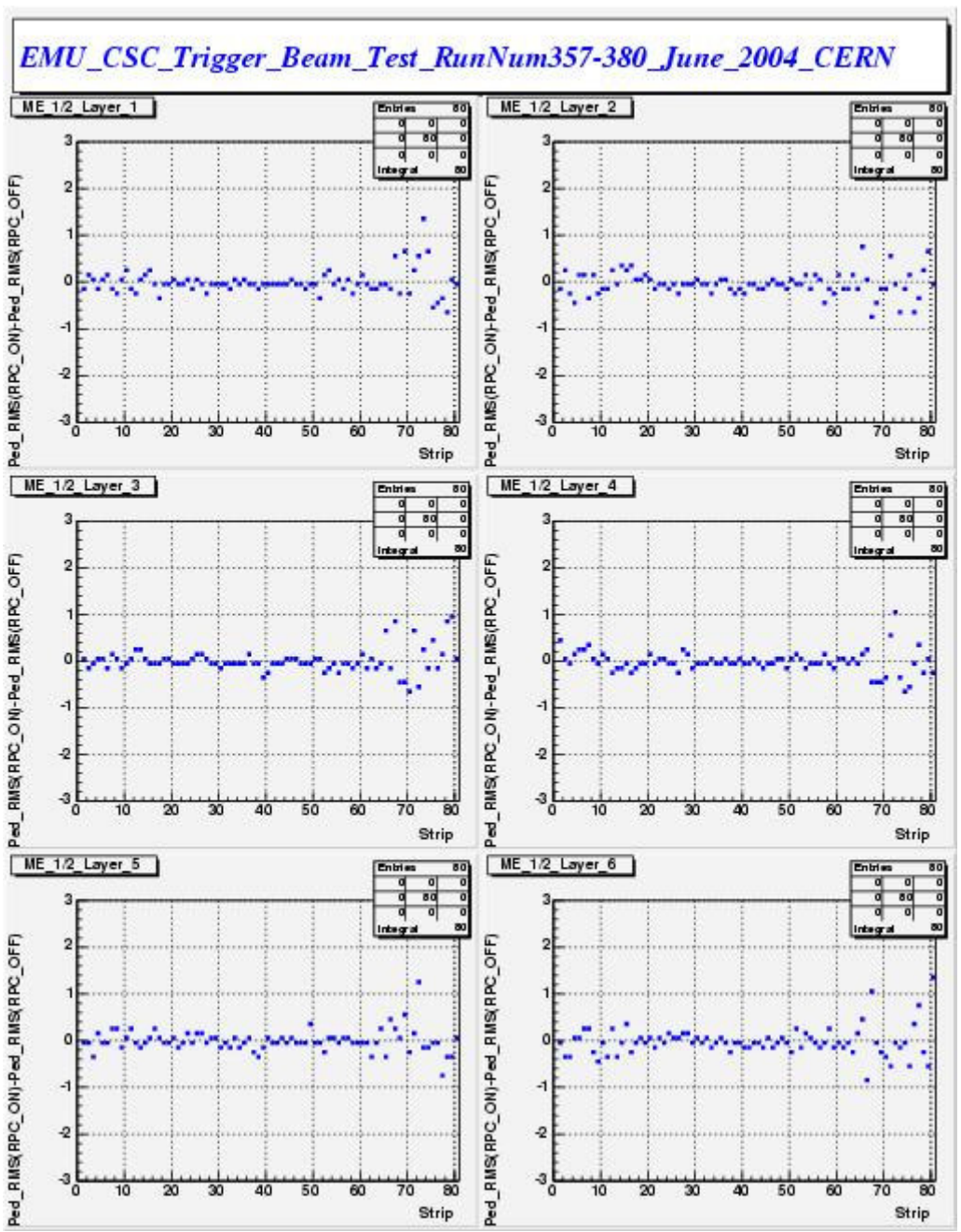
RPC impact on CSC in the June '04 test





RPC impact on CSC in the June '04 test





RPC impact on CSC in the June '04 test

- **RPC and CFEB pedestals (cont'd)**
  - **No RPC impact on the ME1/2 CFEB pedestals and RMS was observed**
  - **The result is inconclusive (CFEB pedestals from the first time bins)**
  - **Our suggestion: perform a stand-alone test at ISR with RPC installed on CSC**

    (in spite of different grounding conditions at ISR and on iron disks)

RPC impact on CSC in the June '04 test

- **Conditions of the stand-alone test at ISR**
  - RPC HV ON/OFF, CSC HV OFF
  - Use the FAST site test #11 (ALCT single-plane self-trigger mode, AFEB counting noise)
  - Use the FAST site test #18 (CLCT single-plane self-trigger mode, comparator counting noise)
  - Count all signals from HV OFF CSC (induced by cosmic muons in RPC plus CSC pick up noise)
  - Add the FAST site test #15 (CFEB DAQ-path noise) with trigger from RPC in case of effect to see the CSC signal amplitude

Use of GRID client for file transfer

- **File transfer in '03 and June '04 beam tests**
  - **Files were copied to CERN CASTOR**
  - **After beam test files were copied from CASTOR to Fermilab Enstore mass storage system**
    - **CASTOR→ lxplus.cern.ch→ *.fnal.gov→ dCache→Enstore**
    - **Slow process on lxplus if randomly chosen files are not prestaged in advance in CASTOR**
    - **Faster if files are copied from one CASTOR tape in their order on tape**
    - **June '04 beam test - ~900 data files (compressed, 54 GB total) were copied to Enstore during a few days**

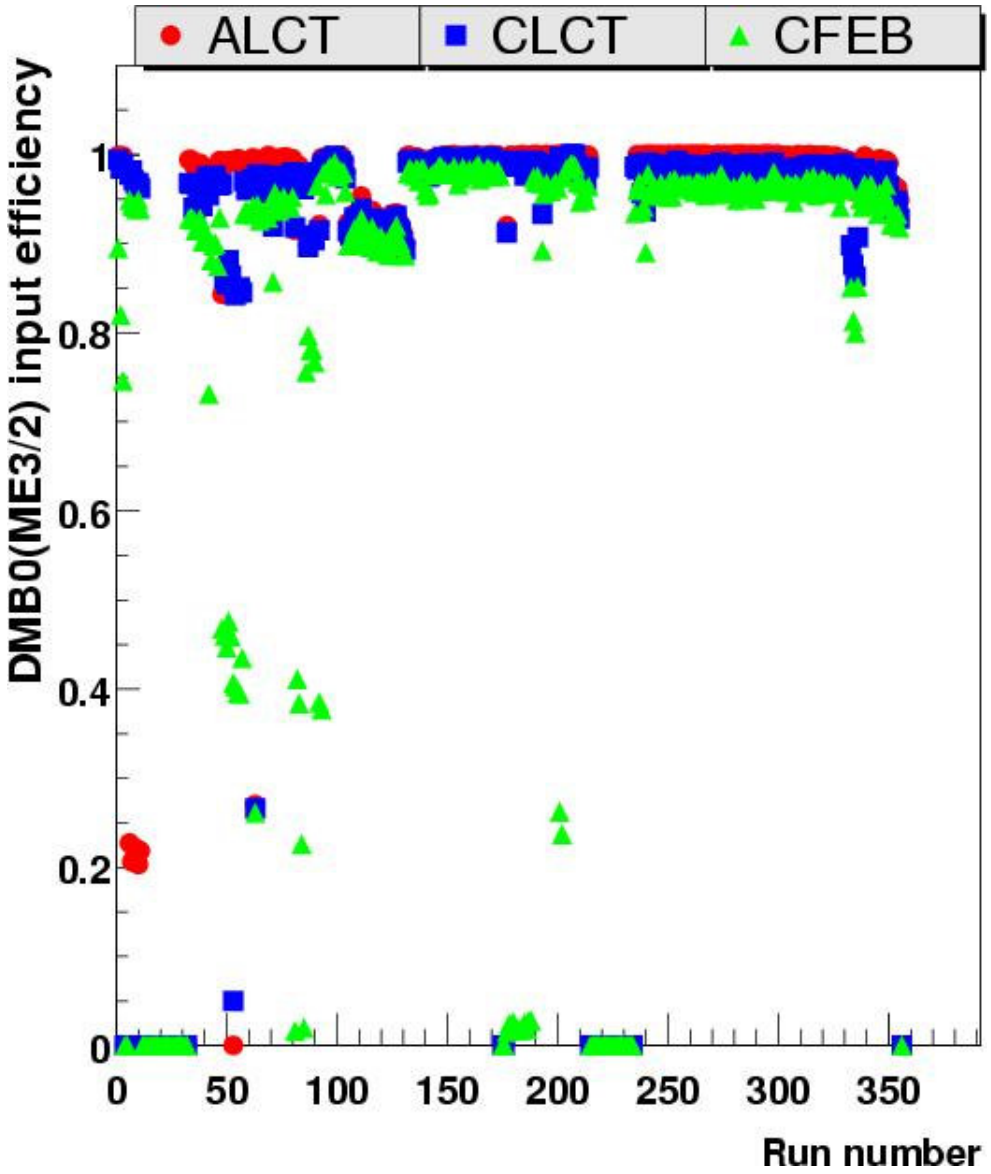
Use of GRID client for file transfer

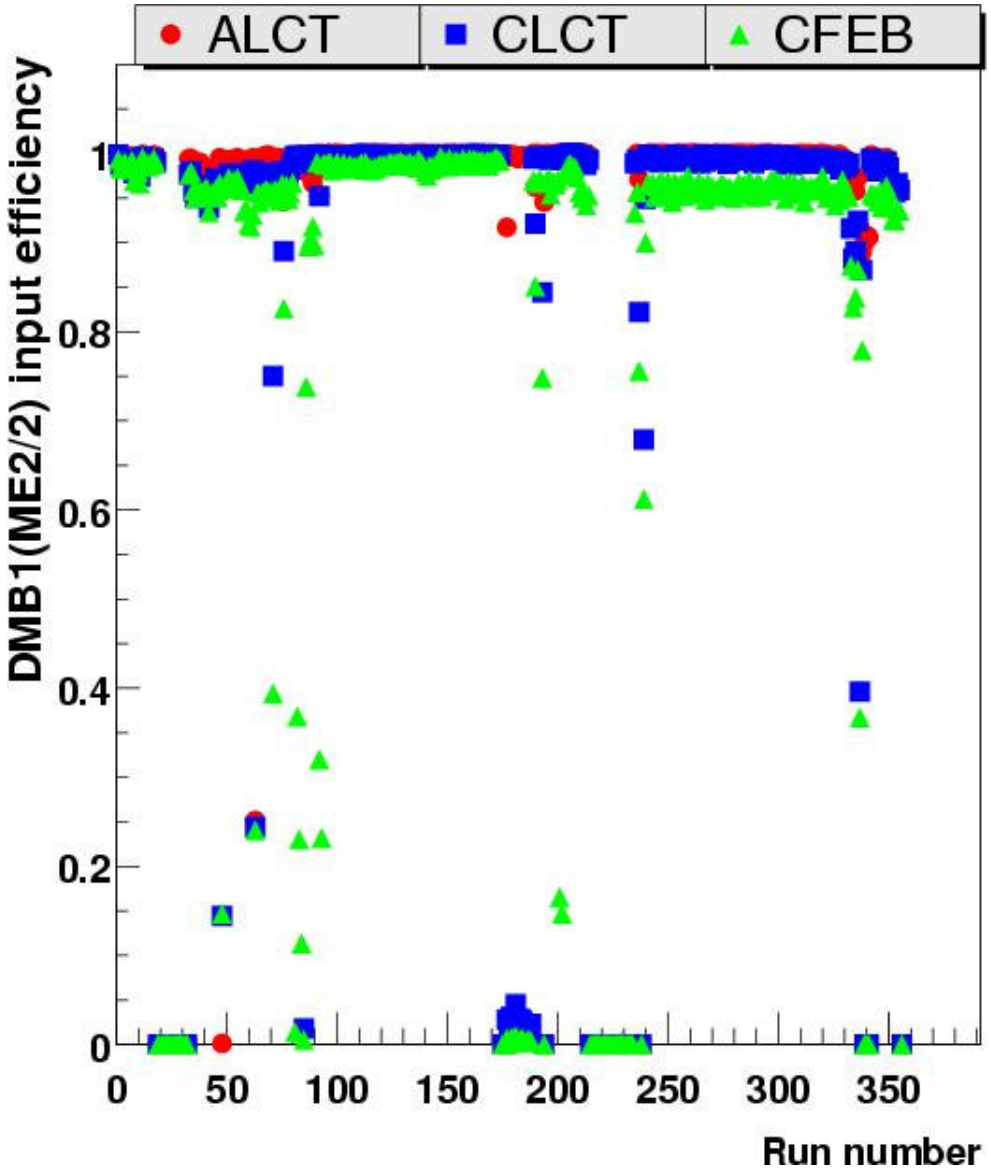
- **File transfer with GRID in Oct. '04 beam test**
  - **Install a Grid client on CMU machine pcepcmu01 at CERN (with I. Vorobiev and help of Yujun Wu of Fermilab)**
  - **Use srmcp interface to copy files from pcepcmu01 directly to Fermilab Enstore via dCache**
    - **Simple script was made to automate compressing input files and sending them to Fermilab with one line srmcp command**
    - **Reliable work during the beam test, total about 500 files**
    - **In parallel all files were stored on pcepcmu01 as well**
    - **Input files were ftped from DAQ machine geurts2 to pcepcmu01 through fast local network**

Selecting Oct. '04 test beam runs for analysis

- **Available test beam information**
  - **Web site**
    - www-hep.phys.cmu.edu/cms/Beam_Test_Sep_2004/tb.html
  - **Test Beam Run-Log Database (2004)**
    - oraweb03.cern.ch:9000/pls/cms_emu_cern.pro/run_log1.top_page
    - Many records post factum, many debugging runs taken by experts
    - To analyze the data consult also the experts about run conditions
  - **Results of quick "online" analysis available on web**
    - Made with script using A.Tumanov's code fastAnal
    - Gives fractions of events per run with ALCT, CLCT tracks and CFEB data blocks in DMBs (DAQ Motheboards) in all 5 CSCs
    - Trigger dependent interpretation (as an efficiency in case of scintillator trigger only)
    - Helps to choose the run for analysis

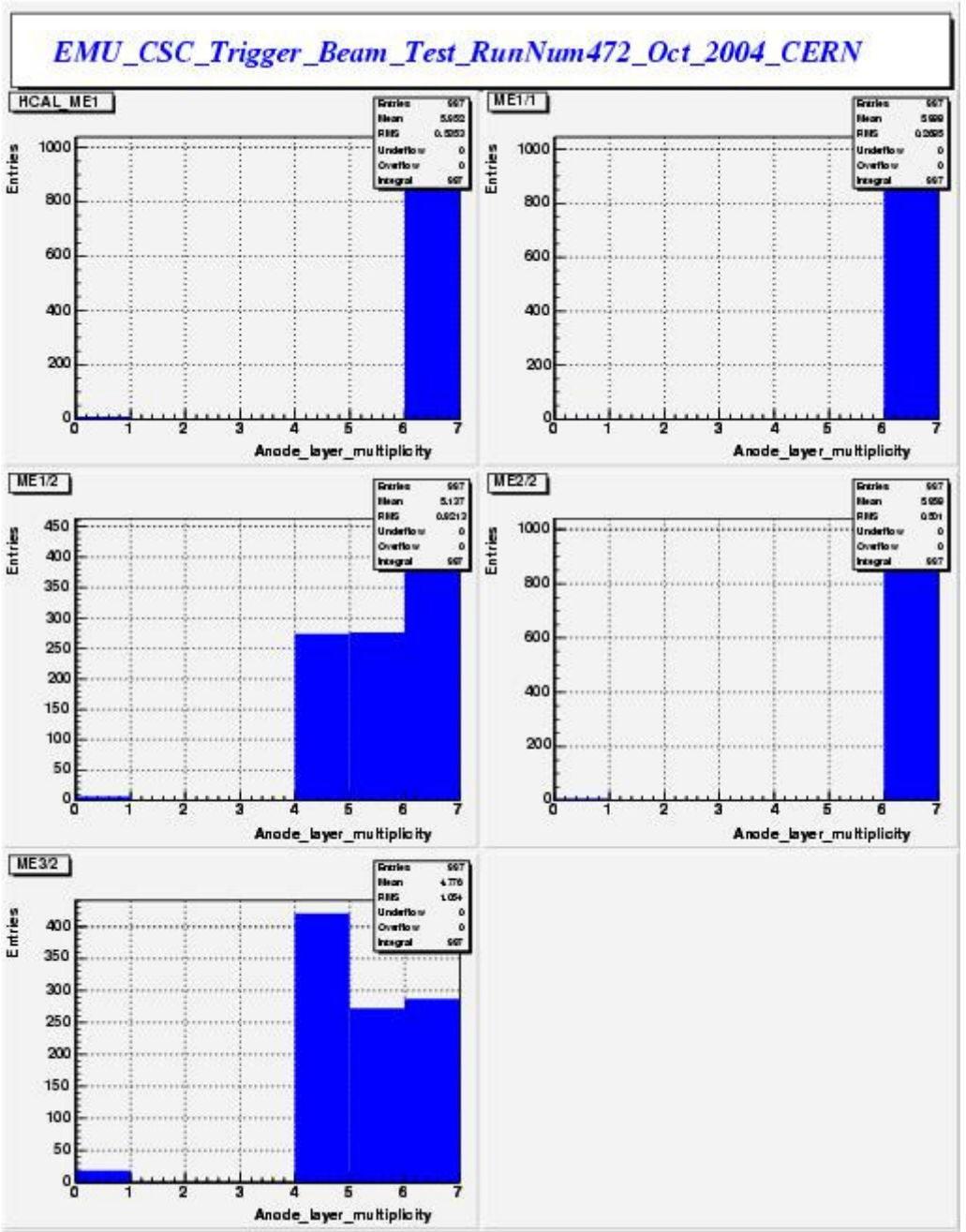
Selecting Oct. '04 test beam runs for analysis





Raw data efficiency in Oct. '04 test beam

- **Data from Run 472 (preliminary, first 1000 events)**
  - ALCT, CLCT tracks ~100% in DMBs of all 5 CSCs
  - CFEB presence ~95-99% in DMBs of all 5 CSCs
  - However, ME1/2 and/or ME3/2 often have no data in 1-2 layers
  - HV=3.62 kV (ME1/2), 3.65 kV (ME3/2); ALCT DACthr=20 for all CSCs (AFEB Qthr=20-35 fC)
  - More details in "Data analysis" link of the test beam web site
  - Low efficiency is due to low HV in the CSC's button region, see the talk of A. Korytov



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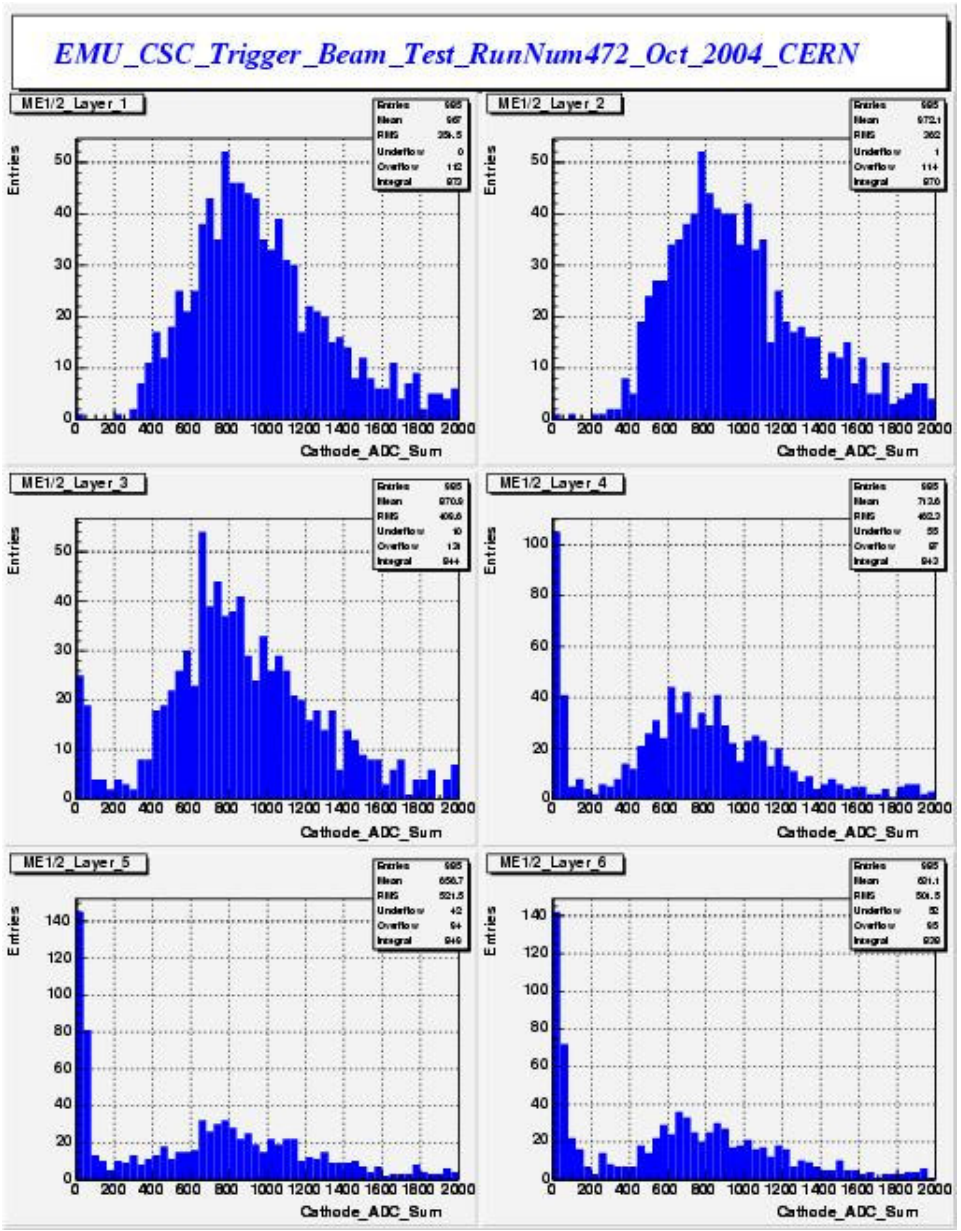

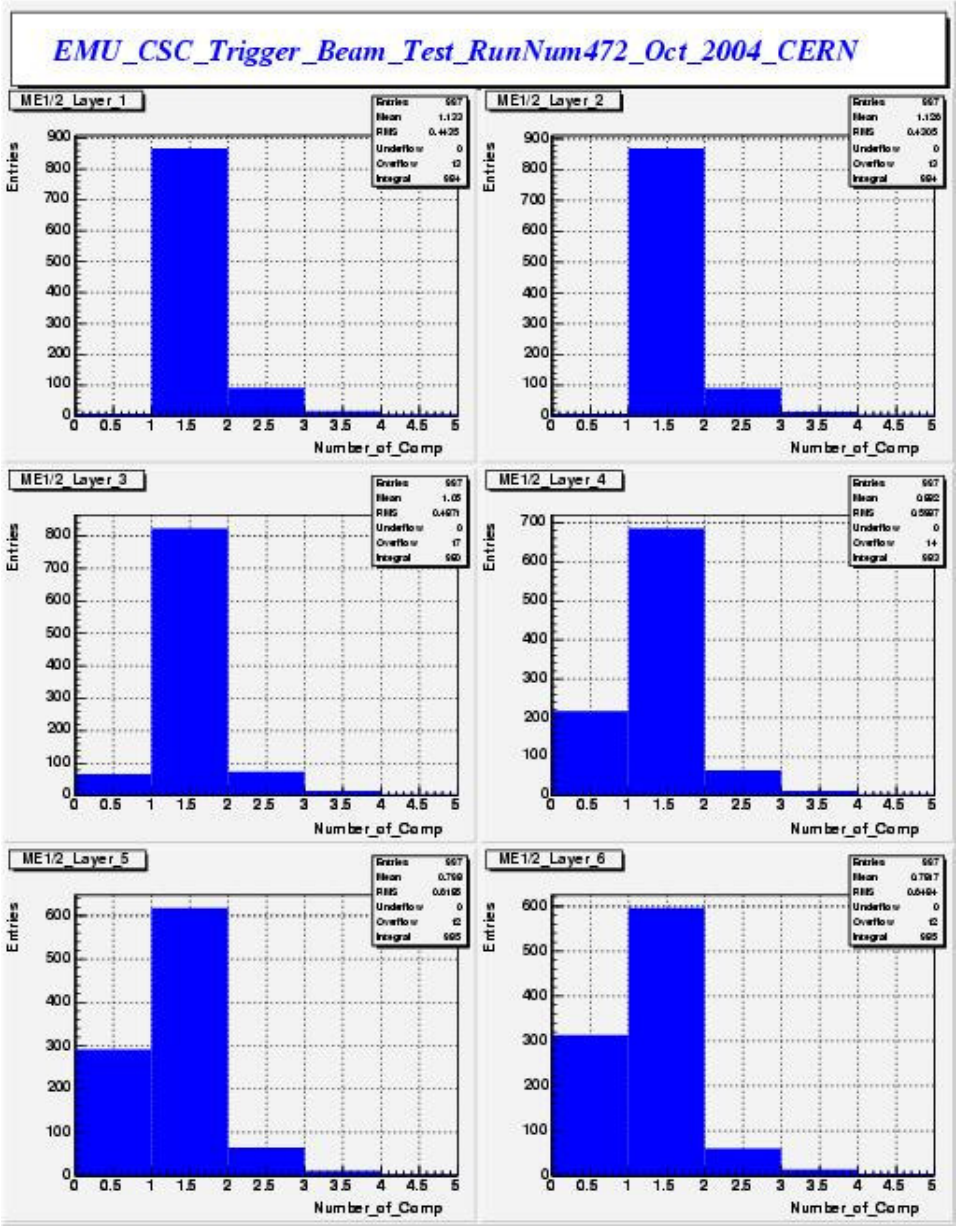

Plans

- **Continue analysis of the Oct. ’04 test beam data.**
  The package available in EmuDAQ/Analysis folder of the US-CMS Slice Test Software Repository at UF
  (the latest status yet to be commited).

- **Update ROOT tree file with latest results from FAST sites at IHEP, PNPI, ISR and SX5. Provide data for DB at CERN**
  (with I.Vorobiev).

- **Participate in work of the LPC Muon Group at Fermilab.**

- **Participate in Slice Test runs at UF and CERN.**