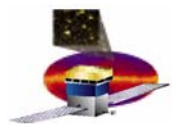


Beam Test Status

Benoit, Eduardo and Luca

Aug 1, 2006



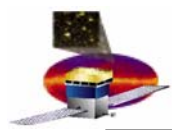
Delivery @ CERN: July 25

Arrival @ CERN 9 am (French side)

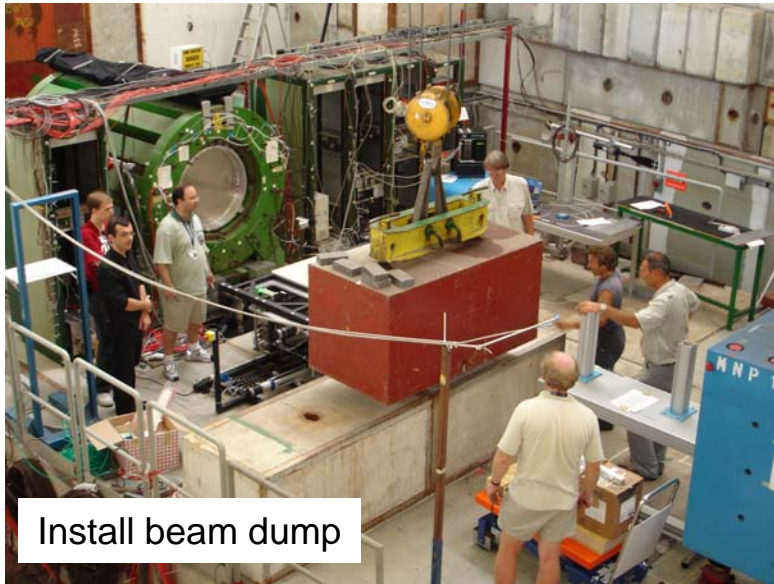


Cleared customs and delivered to PS 1 pm (Switzerland side)

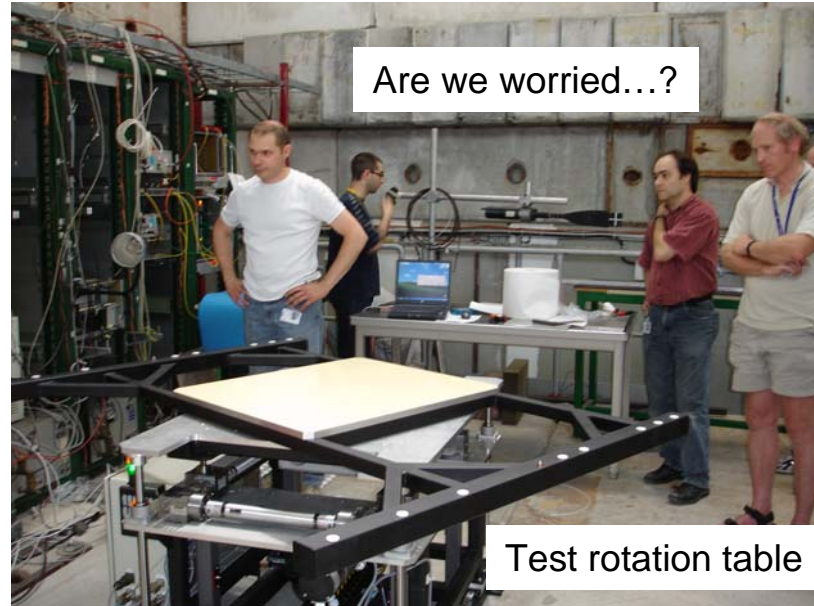




Installation July 25 (afternoon)



Install beam dump



Are we worried...?

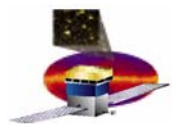
Test rotation table



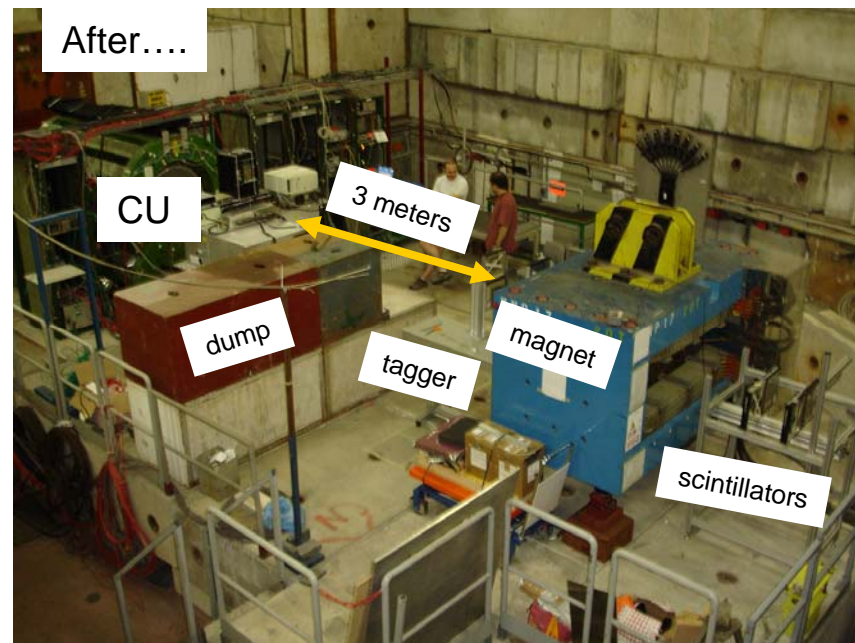
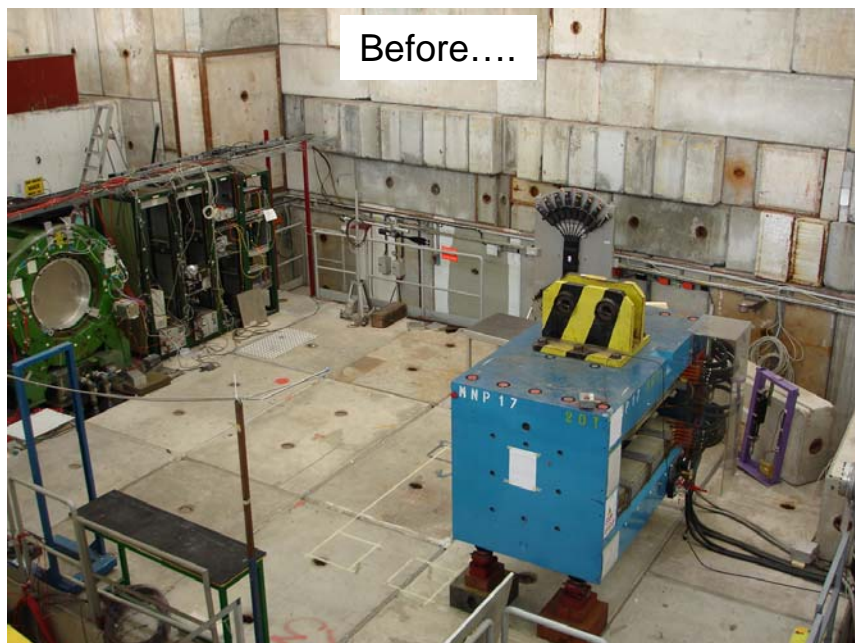
Install CU

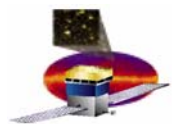


Install DAQ...at least tried...



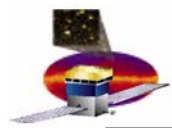
Experimental Set-up





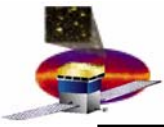
Safety Visit from CERN



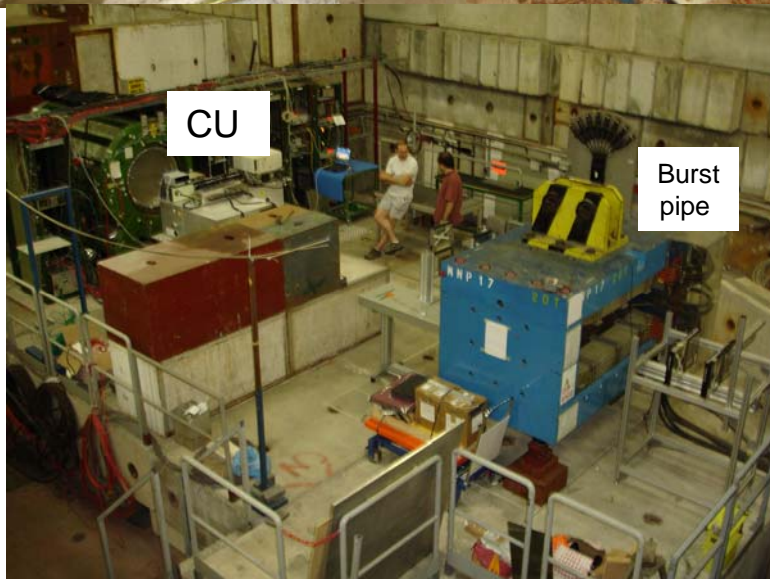
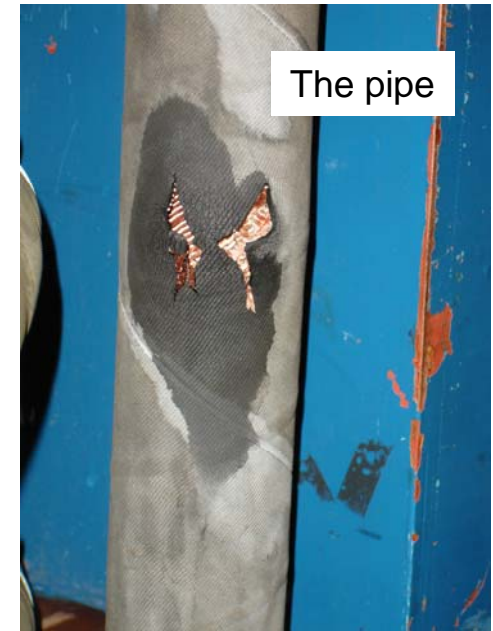
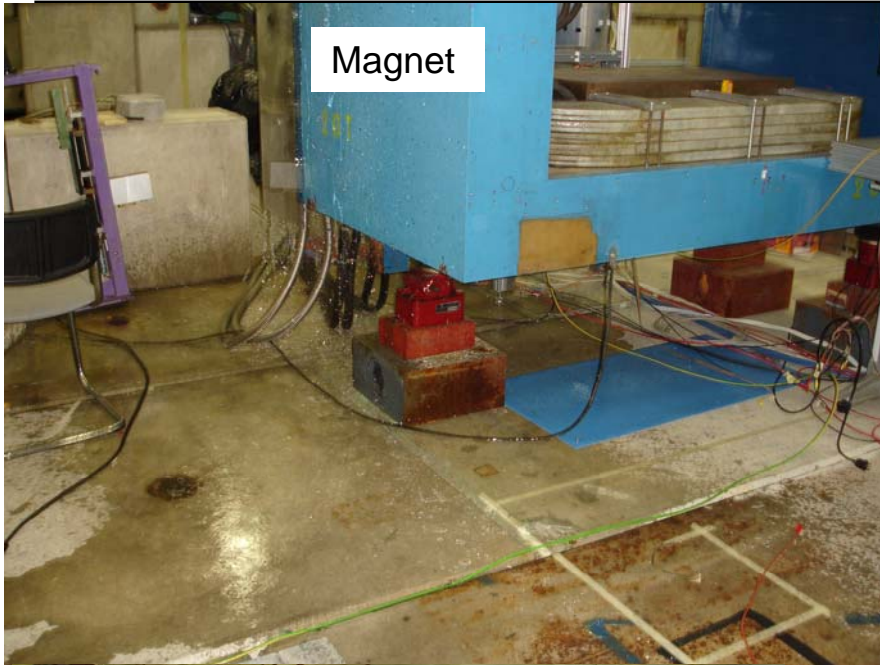


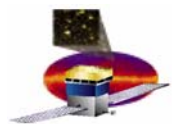
Murphy has been on shift with us...

- Despite of the excellent start we had a few problems
 - Water pipe in the magnet burst and we had a water leak
 - No damage to our hardware (see photos)
 - Power failure over the weekend lost 3 days of beam (Sat-Mon) and PS is slowing starting today.
 - BT server (main computer) did not want to start
 - » eventually got fixed
 - Leakage in the cooling coil in the bottom of the inner shipping container (ISC)
 - No damage to our hardware
 - Added fan for cooling XY table motors and rely on top ISC cooling coil and all is under control
 - Excess noise in some of the Silicon chambers
 - Diagnosing the problem



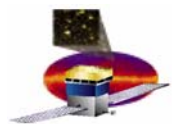
The Magnet fountain...





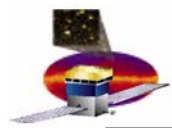
Overview of PS Test Beam Program

- Installation of Set-up and beam dump
 - Took a day as predicted and CERN people were impressed of our preparedness
- DAQ synchronization
 - Verified by online only, ancillary not yet in the offline code
- Study of Trigger (today's presentation)
 - Still working on it
- Characterization of beam, upstream background and correlation of XY table coordinates and beam location (today's presentation)
 - In progress
- Timing of CU with external trigger
 - See presentation today
- Definition of data taking configurations (today's presentation)
 - See presentation today
 - Some runs crashed and have packet errors. We have old TEMs. Need to understand where we are (Eric Sisskind is helping)
 - ROI for CU bneing defined
- CAL Calibrations (today's presentation)
 - Initial runs taken, need more with properly timed system, enable CAL_HI and 4 range readout
- ACD Calibrations
 - Initial runs taken, currently being analyzed
 - Peds and mip peaks are there but BT ntuples (name in the elog is SVAC for historical reasons) are not yet being filled
- Study Tagger Set-up
 - Started yesterday (Aug 31).
- Untagged photon runs
- Tagged photon runs
- MMS background studies



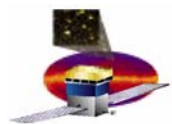
Today Status

- Beam back last night (yeah!)
- Studied material in the beam line and upstream
 - Performed scans with 5 GeV electrons (5 angles and also in the center of the tower)
 - e.g. compare multiplicities in TKR and CAL
 - CAL Calibrations
 - Need 4 range readout mode to inter-calibrate ranges (still need to collect data for CAL in bay 1 where there is no TKR)
 - » We had old data not necessarily timed for bays 2 and 3, will take new points with better timing, but do not expect much of a change in the calibrations (1% level?)
 - » Will take data for bay 1 (no TKR above)
 - ACD Calibrations
- Alignment of Set-up for tagged photon runs
 - Started yesterday and identified excess noise in Si chambers
- Online Development
 - Monitoring histograms to support tagged photon activities
- Offline infrastructure
 - Ancillary data is crashing the code, need to debug
- Offline local code
 - available for testing
 - Overlays MC and DATA for each configuration



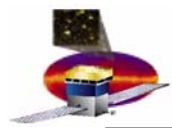
Limited Resources...What's new?

- We have about 20 people per day
 - Not enough !!
- Some documentation and infrastructure are not yet in place
 - so be patient if you want to do data analysis
- There are mistakes and problems (we are in debugging phase)
 - Some electron runs were labeled as pions
 - Difficult to find out which configuration is which
 - Since when timing was working ,etc...
 - The runs database does not yet display table positions and beam momentum
 - We have elogs but not completely filled and soon will be
- So if you want to do some data analysis
 - So far we have taken data with pions and electrons
 - Send us an email and ask and we can coach you to the correct runs and update the electronic log as we go along



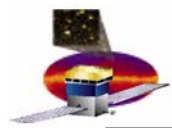
Trigger

- **Trigger Set-up (see presentation today)**
 - **Electrons**
 - Scintillators AND Cerenkov + halo veto (optional – not used so far)
 - **Photons**
 - Scintillators AND Cerenkov + halo veto (optional – not used so far)
 - » Add S4 to trigger on tagged electrons going through last SSD
 - » Consider reducing number of scintillators along the beam line to reduce material
 - **Hadrons**
 - Scintillators AND NOT Cerenkov (used as veto) + halo veto (optional – not used so far)
- **Trigger rates**
 - 3 spills (0.4s each) per 16 sec PS cycle
 - CU readout rate will be instantaneous 2-3 KHz x 1.2/16 is < avg rate of 300 Hz
 - Depending on trigger setup and beam composition we need to work on the collimators to match this condition
 - We will provide a table with details later
 - We are taking data at about an average of 100 Hz (electron trigger)
 - Limitation is Ancillary detectors at 1 ms deadtime
 - Expect about 600 tagged photons per cycle on CU
- **Recommendations for Data Analysis**
 - For very few runs the Cerenkov was not turned on (shift operator mistake not a technical problem)
 - We are still debugging
 - At 5 GeV we expect about >90% of the beam to be pions
 - » Note that we do not trigger on 100% of the beam triggers
 - We are checking CAL energy distributions
 - » If pions: mostly minimum ionizing and 5 GeV peak
 - » If pions and no Cerenkov: 5 GeV peak plus a lot of other stuff .



Recommended Runs during debugging stage

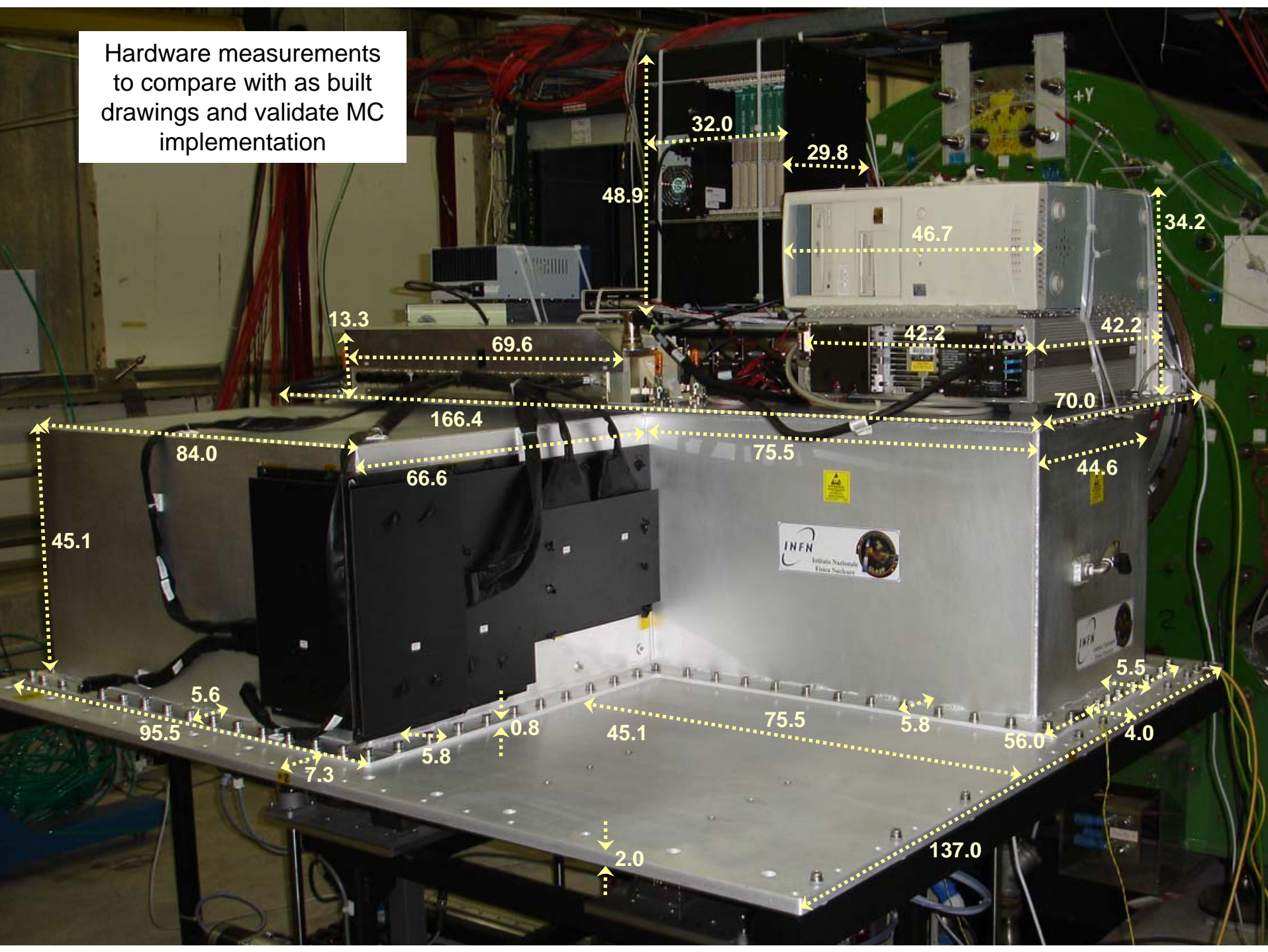
- We continuously updating the link in the beam test page
 - **Beam Test 2006 : Data Analysis**
 - Data Taking Info
 - » Relevant Run Info : here you find details about runs to be analyzed

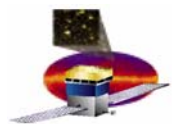


TEM errors and FIFO Full Errors

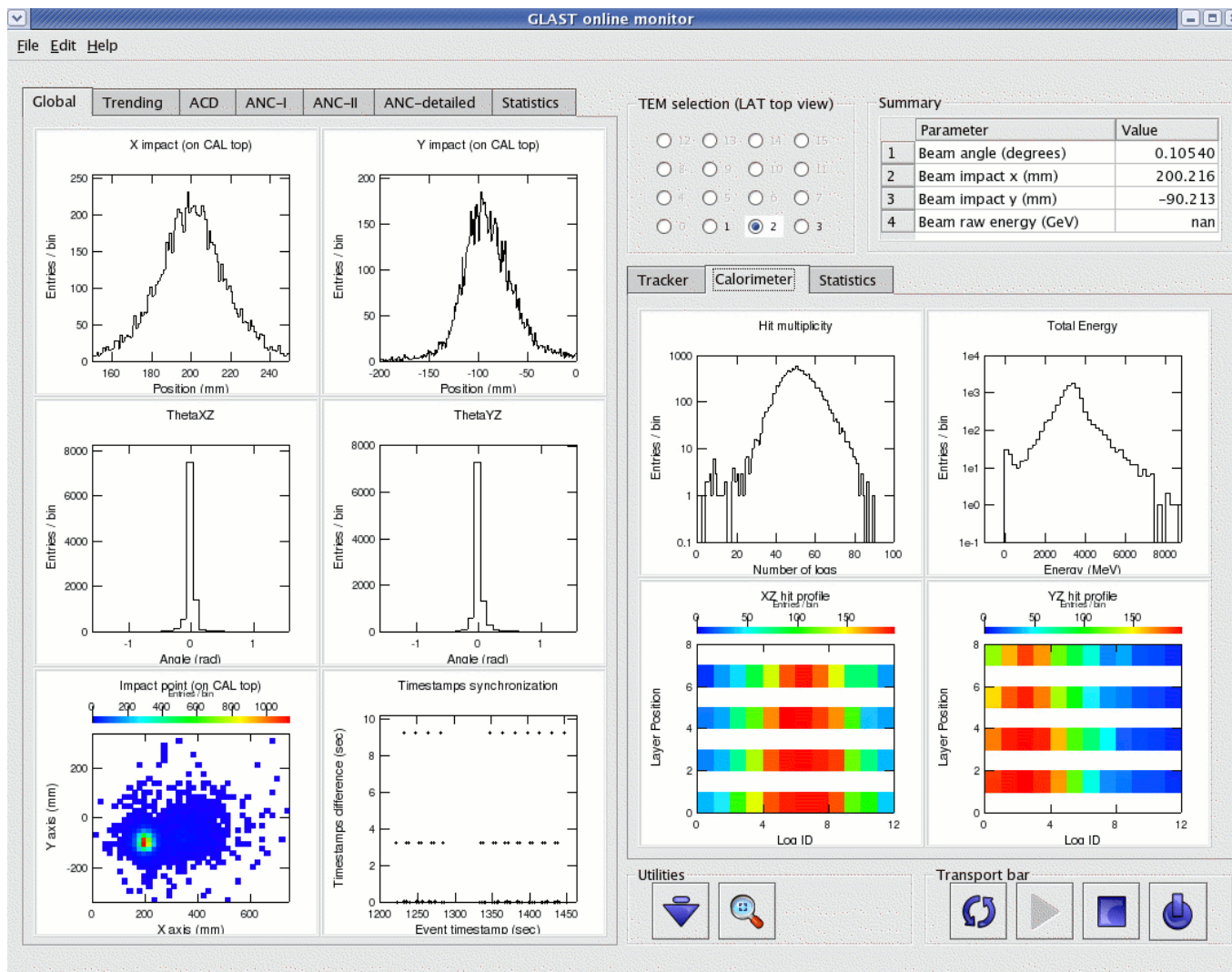
- All TEMs are NOT flight and NOT flight-like
 - old firmware has a TEM bug
 - Maybe fight ones too (Eric Sisskind is looking into it)
- TEM produces error contributions with error types that are NOT true errors
 - Some state cause false report of errors
 - When error info is dropped into the TEM FIFO's the error contribution is not parsable and then we get a segmentation fault
 - To avoid these problems we just need to limit trigger rate
 - TBD experimentally for all towers if there is
 - » rate dependence
 - » Ext vs internal trigger
 - » With out without ancillary detectors
 - » Make sure in LDF to digi all contributions have the same run number
- We are starting discussions on how to change CC FIFO full buffer for PS and SPS runs. Need to involve a broader group.
 - Registers: RC limit (64), CC FIFO almost full (32), CC FIFO Full (128)
 - We were using old code and the value of 32 was changed to 64

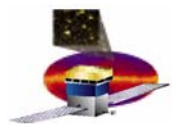
Hardware measurements
to compare with as built
drawings and validate MC
implementation





Online monitoring 5 GeV electrons









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Added by [Tony Johnson](#), last edited by [benoit lott](#) on Aug 01, 2006 ([view change](#))

Labels: (None) [EDIT](#)  

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Beam Test 2006 : Operations

This is dedicated to the control room activities

General: [Message Board](#) [3PM Meetings Calendar](#) [Meeting minutes](#) [Phone Numbers](#) [Who is on Shift?](#)

Data Taking: [Configurations](#) [Instructions for Shifts](#) [What is in the Control Room](#) [Elogbook](#) [Shift Log](#)

Online: [Env. Monitoring](#) [Running Run Control](#) [Online Monitoring](#) [Ancillary Detectors](#)

Monitoring: [CU](#) [Environmental](#) [AD](#) [Local Offline](#) [Data Monitoring](#) [Pipeline](#)

Trigger and DAQ: [PS Computer Network](#) [Trigger Logic](#) [Hardware](#) [CU Trigger](#)

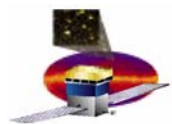
PS Ancillary Detectors: [SSD Chambers](#) [Scintillators](#) [Calorimeter](#)

Instrument Procedures: [Safety](#) [HV Turn-On](#) [Support Table](#)

PS Procedures: [Safety](#) [Access to T9](#) [Change Magnet Settings](#)

SPS Procedures: [Safety](#) [Access to H4](#)

Drawings: [PS Setup](#) [CU/ISC](#)



Data Analysis.. Scroll down the page

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Online: Env. Monitoring [Running Run Control](#) Online Monitoring Ancillary Detectors

Monitoring: CU Environmental AD Local Offline [Data Monitoring](#) [Pipeline](#)

Trigger and DAQ: PS Computer Network [Trigger Logic](#) Hardware [CU Trigger](#)

PS Ancillary Detectors: SSD Chambers Scintillators Calorimeter

Instrument Procedures: Safety [HV Turn-On](#) [Support Table](#)

PS Procedures: Safety Access to T9 Change Magnet Settings

SPS Procedures: Safety Access to H4

Drawings: PS Setup CU/ISC

Beam Test 2006: Data Analysis

This is the for data analysis mostly

General: [Forum](#) [Presentations](#) [CCB BT](#) [YRVS](#) [Workshop 3](#) [Workshop 2](#) [Workshop 1](#)

Data Access [Get Data](#) [Get MC Data](#) [Status of Priority Runs](#) [Summary of Run Types](#)

Data Taking Info: [Shift Log](#) [Table Positions](#) [Table Description](#) [Relevant Run Info](#)

Data Analysis Topics: [MMS Background](#) PSF [Other CAL parameters](#) [Tkr Hits](#)

Data Analysis Info: [BT Workbook](#) [Calibrations](#)

Offline Software: [Known Bugs](#) [BT Pipeline](#) [Local Offline](#) [BT Geometry](#) [Pipeline errors](#) [Offline Monitor](#)

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