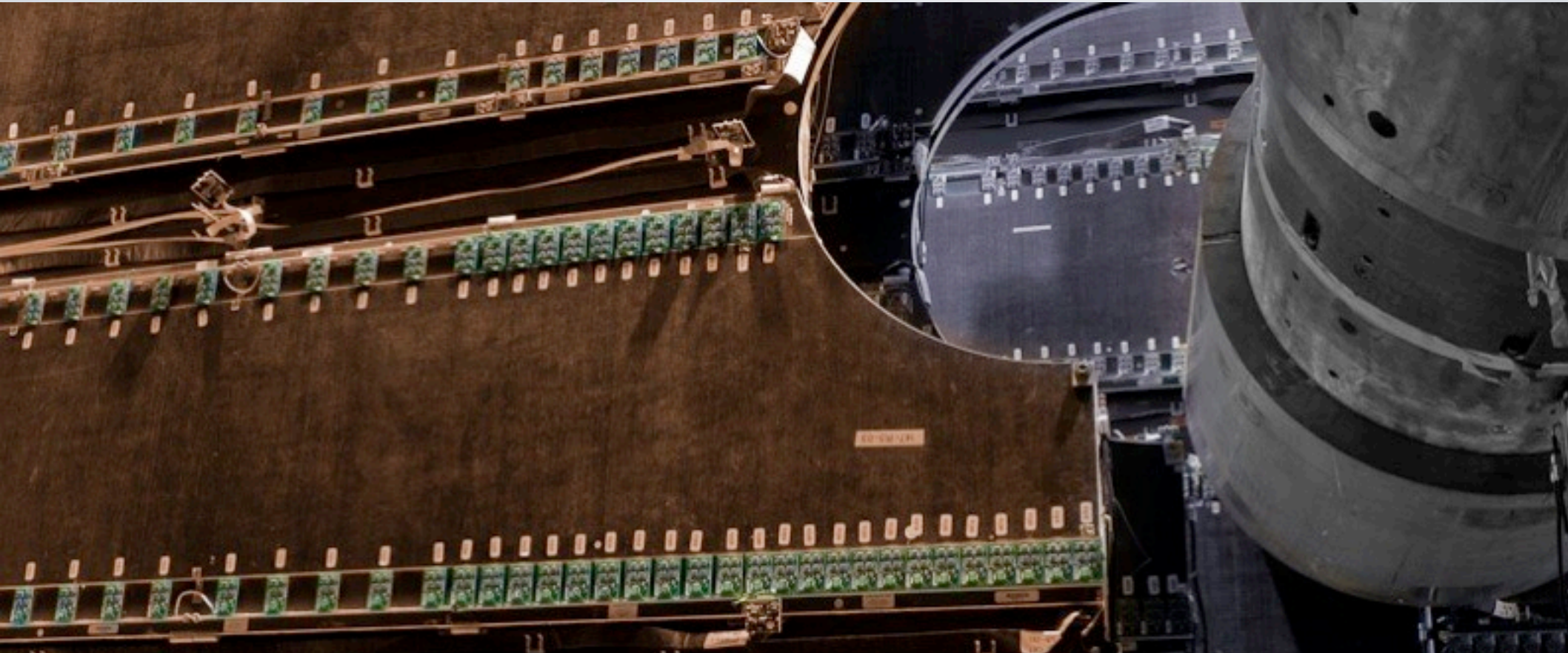


MUON STATUS REPORT



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for the Dimuon Project

Alice Offline Week - March 2010, 16th

DETECTOR STATUS

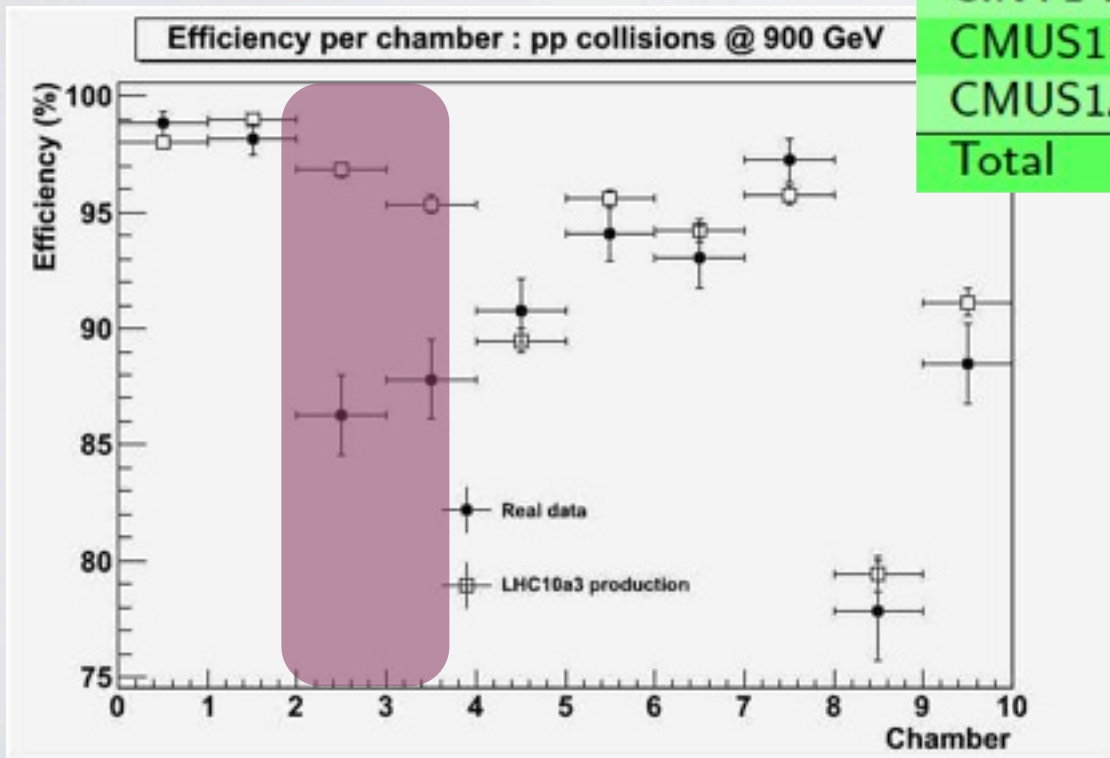
TRACKING DETECTOR CHANGES

- Since January, worked on :
 - improving the (already good) number of available channels
 - 98.54 % (98.69 %) of channels have a noise < 5 (10) ADC #
 - 97.29 % (97.43 %) of channels have a noise < 5 (10) ADC # and with a wide cut on occupancy (mean occupancy of one pad of a MANU $< 1\%$)
 - **even considering the few (2-3) high occupancy bus patches we still have, the percentage of good channels is $> 96\%$**
 - improving LV/HV stability

TRACKING DETECTOR (MCH) DEC09

Note the discrepancy for Station 2 (chambers 3-4)
 ⇒ clustering bug fix

Trigger class fired	Events	Tracks
CBEAMB-ABCE-NOPF-ALL	149153	1
CINT1B-ABCE-NOPF-ALL	198942	1478
CINT1A-ABCE-NOPF-ALL	28841	123
CINT1C-ABCE-NOPF-ALL	26330	5
CINT1-E-NOPF-ALL	7981	0
CMUS1B-ABCE-NOPF-ALL	873	471
CMUS1A-ABCE-NOPF-ALL	96	36
Total	411279	1626



Note also the low statistics
 ⇒ no alignment possible

Run list
104824
104825
104841
104845
104849
104852
104867
104890
104892

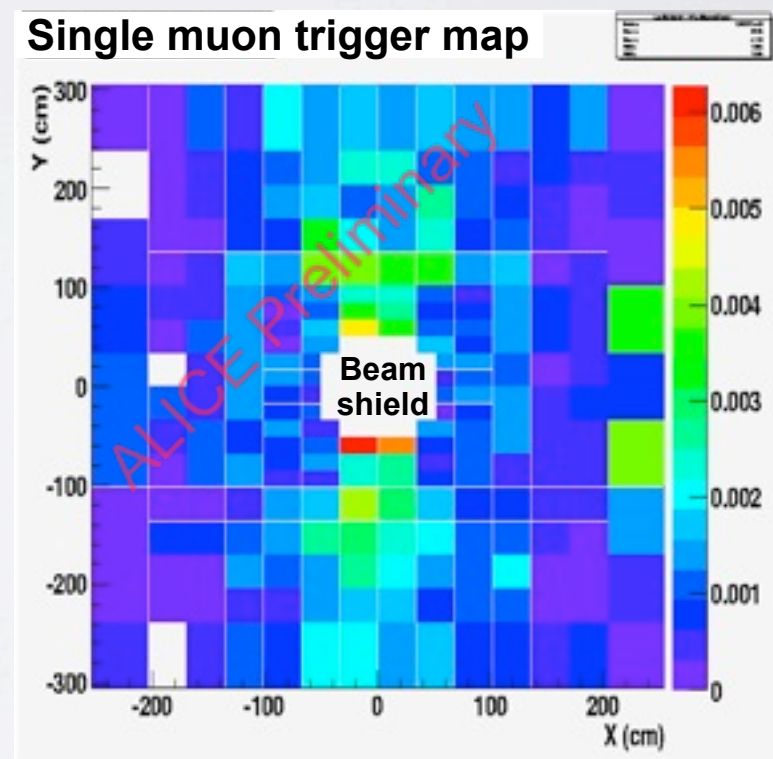
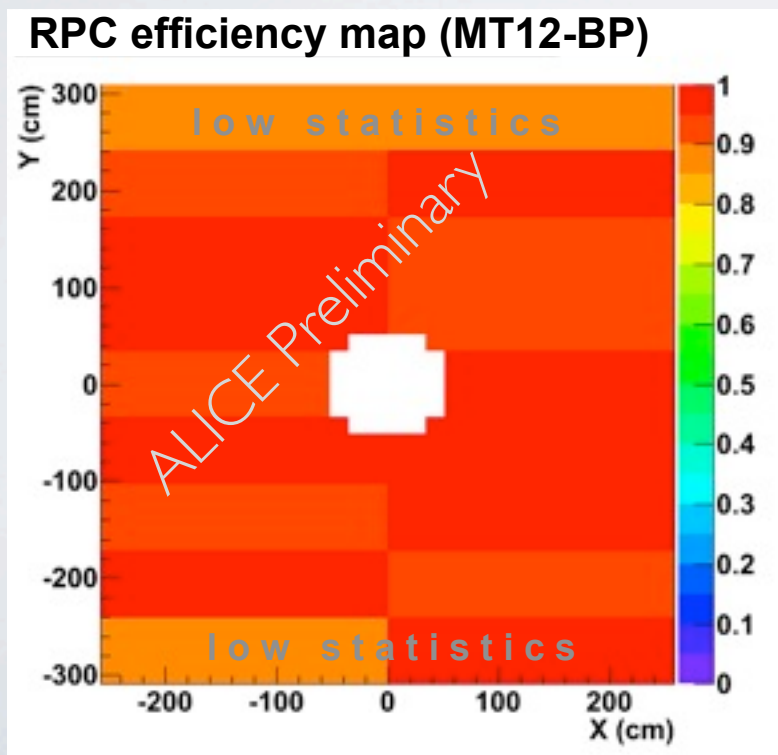
For more results see Physics Forum Feb. 17th, 2010 @ <http://indico.cern.ch/conferenceDisplay.py?confId=81362>

MCH PEDESTAL DA & SUBPROCESSOR LOGIC CHANGE

- The pedestal DA used to put on the FXS both the pedestal files themselves, *and* the configuration of the detector
- The latter was written with label "changed" (if configuration changed from the last run) or "unchanged" (if not)
- The Shuttle preprocessor would store the pedestals (always) and the configuration (if it was labelled as "changed")
- Unfortunately this logic turned out to be *incorrect*, as the DA is LDC-based, and so can not have a global view of the configuration
- Only the Shuttle preprocessor can decide whether the full config has changed or not. So it's now in charge of this task as well. Does it by comparing the config on the FXS to the one currently in the OCDB

TRIGGER DETECTOR (MTR) DEC09

- Detectors and electronics fully ready and operated during Dec09 pp run
- «Single-muon-allPt» included in the L0 trigger decision of the «muon» cluster
- Stable currents and rates, eff. $> 90\%$ for most RPC (with conservative HV)
- $(0.5 \% \pm 0.1\%)$ «Single-muon-allPt» per MB event



TRIGGER DETECTOR CHANGES

- New DA functionality for local masks (x/y strips of the local trigger boards) in MUONTRGda.cxx (previously, the strips were not masked). It is important for the correct simulation of the trigger response.
 - since Jan. 27th 2010 at P2
 - OCDB/MUON/Calib/LocalTriggerBoardMasks/ object
 - Found 0.04% dead and 0.16% noisy channels (from ~21k channels), mainly due the large splash of beam particles from Oct. 2009
- A new type of run was introduced, with physics events interlaced with calibration events (Front-End pulser and scaler read-out, for the MUON case) every ~30s.
 - This was checked on one run (112503) which was reconstructed (at request) without any problems from the MUON side

RECENT OFFLINE CODE UPDATES AND FIXES

EVE DISPLAY

- New macros (in `$ALICE_ROOT/EVE/alice-macros` and `$ALICE_ROOT/EVE/macros`) by P. Pillot
 - `muon_init.C`: to launch the new display (based on `visscan_init.C`)
 - `muon_raw.C`: display digits from raw data
 - `muon_digits.C`: display digits from `MUON.Digits.root` file
 - `muon_clusters.C`: display clusters from `MUON.RecPoints.root` file
 - `esd_muon_tracks.C`: display tracks and clusters attached to tracks from ESD
 - `muon_trackRefs.C`: display simulated tracks and hits in the MUON chambers
- Updated the `visscan_xxx.C` macro to include MUON in the official display.
- There is an option to disable the display of MUON in order to better see the other detectors.

GEOMETRY

- Introduced rotation of trigger chambers around the x-axis with 0.794 deg (in both simulation and EVE geometries)
 - MUON/AliMUONTriggerGeometryBuilder.cxx
 - MUON/AliMUONResponseTrigger.cxx
 - MUON/data/transform.dat
 - EVE/alice-data/gentle_geo_muon.root

RECO IMPROVEMENTS

- Fine tuned the mean value of the material thickness in radiation lengths of each chamber to better account for MCS effects during the tracking. (P. Pillot)
- Improvement in the calculation of the trigger track parameters. Corrected the computation of MCS dispersion in the iron wall. --> this improves the matching of tracker/trigger tracks. (D. Stocco, P. Pillot)
- Optimization of the offline recalculation of the trigger response (speeded up by a factor 4 on cosmics). (D. Stocco)
- Improvement in the track selection at the end of the tracking to better remove fakes. New flag in ESD/AOD (using 1 free bit of `fITSMuonClusterMap`) to identify tracks sharing cluster(s) with other. (P. Pillot)

BUG FIXES

- Bug fix in clustering bug (Saclay team, L. Aphenetche):
 - Hard-coded constants were not converted to fC unit when all our charges were
 - Now fixed both in trunk and in the release, so **we're ready for pass6**
- Bug fix in read/write local masks (see the new DA functionality) to ensure consistency in both directions (B. Vulpescu)
 - MUON/AliMUONTriggerIO.cxx
- Still problems with the AliFatal in the OCDB access (see next presentation)

TO DO

- Add a **new variable** for the radial position of the track at the end of the absorber, both in ESD and AOD (P. Pillot)
 - This variable has proven to be extremely useful to better understand the effects of the front absorber in the 900 GeV pp data. (up to now, we compute it from the existing info stored in ESD but we need to use the full AliRoot as we need to perform track extrapolation).
- Improvement in trigger QA: skip events with errors due to the corrupted raw data format (A. Blanc)
 - The QA for the trigger part has reported for the 2009 runs errors at the local level (local trigger boards) in 0.003% of the total number of events
 - These errors are due to the corrupted raw data format
 - In the future the QA will skip such events, so it will report only "real" trigger algorithm errors for events where the data integrity is ok

QUESTIONS ?

CHIARA'S SPECIAL

RUN TYPE	MCH	MTR	Raw data	Migrated to MSS	OCDB object: MUON/...
GMS	Yes	No	No	No	Align/Data Align/GMS
PEDESTAL	Yes	No	Yes	No, except for tests	Calib/Pedestals Calib/Config (*)
CALIBRATION	Yes	Yes	Yes	Yes	Calib/Gains Calib/GlobalTriggerCrateConfig (*) Calib/RegionalTriggerConfig (*) Calib/LocalTriggerBoardMasks (*) Calib/TriggerLut (*)
PHYSICS	Yes	Yes	Yes	Yes	Calib/OccupancyMap Calib/TriggerDCS Calib/HV (+calibration trigger objects if calib events embedded)
STANDALONE	Yes	No	Yes	No, except for tests	Calib/OccupancyMap

(*) only if changes occurred since previous entry