

HMPID offline status report

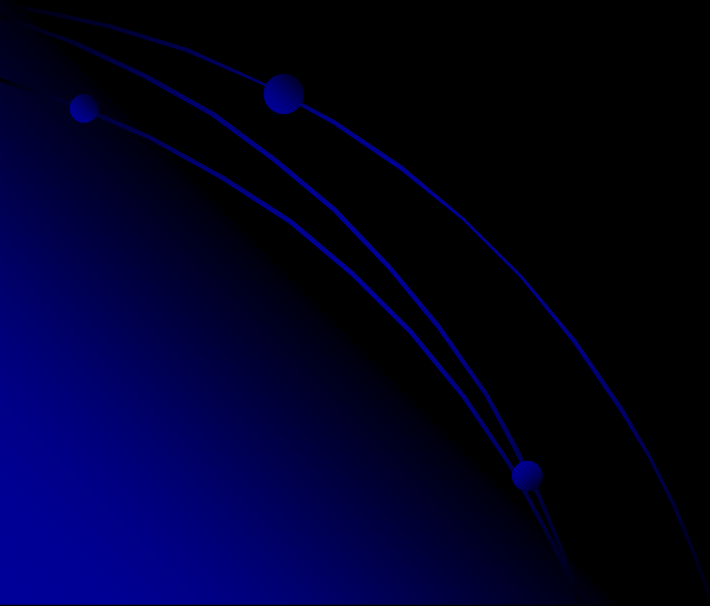
ALICE Offline Week, CERN, 26 October 2009

G. Volpe, D. Di Bari, L. Molnar

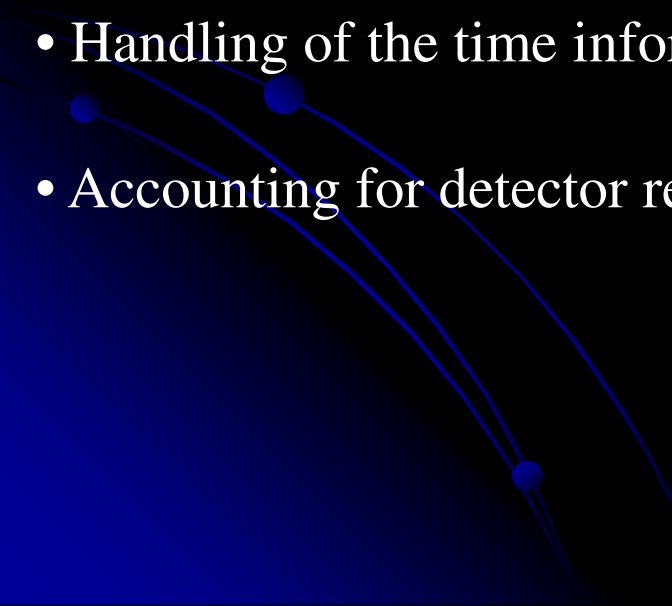


Planning for first data taking

- Photoelectrons charge distribution;
- MIP charge distribution;
- Matching track – MIP, alignment;

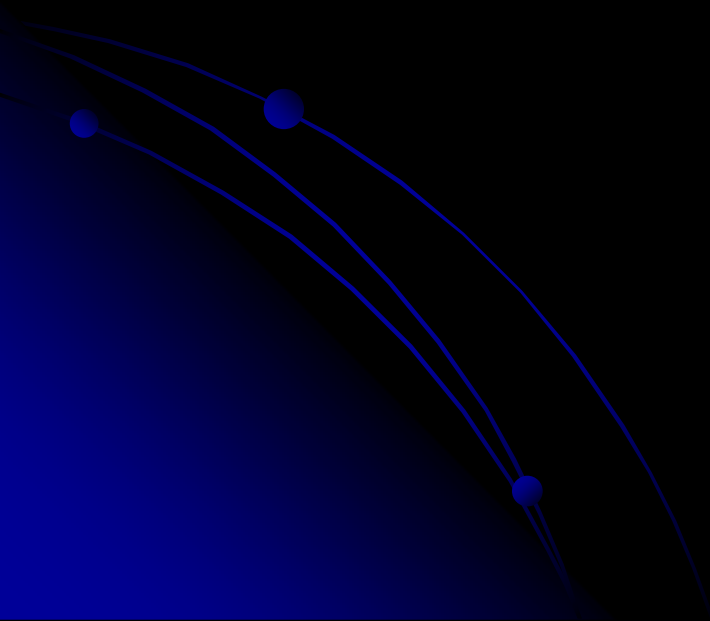


Planning status

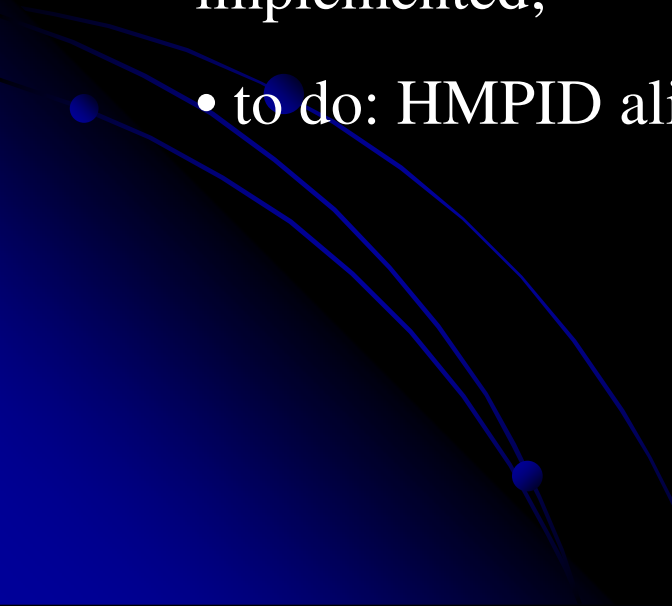
- Alignment procedure 70%
 - Implementation of the CsI QE map as OCDB parameters 50%
 - Implementation of run type in QA 60%
 - Storing of the time information in the hits 0%
 - Handling of the time information from hits during digitization 0%
 - Accounting for detector response in the time information stored in digits 0%
- 

Plannig status

- Correct treatment of the detector signal in the sdigits for event merging 0%
- Clearance around alignable volumes 100%
- Planning of AliRecoParam 100%
- Implementation of RecoParams: cosmic, high flux, low flux, calibration 100%



Status of calibration and alignment

- Calibration (online) procedures for HMPID are ready! (see previous offline status reports);
 - alignment:
 - Small tracks mismatching (residuals 2 mm);
 - alignment macro using AliAlignmentTracks class is implemented;
 - to do: HMPID alignment class implementation.
- 

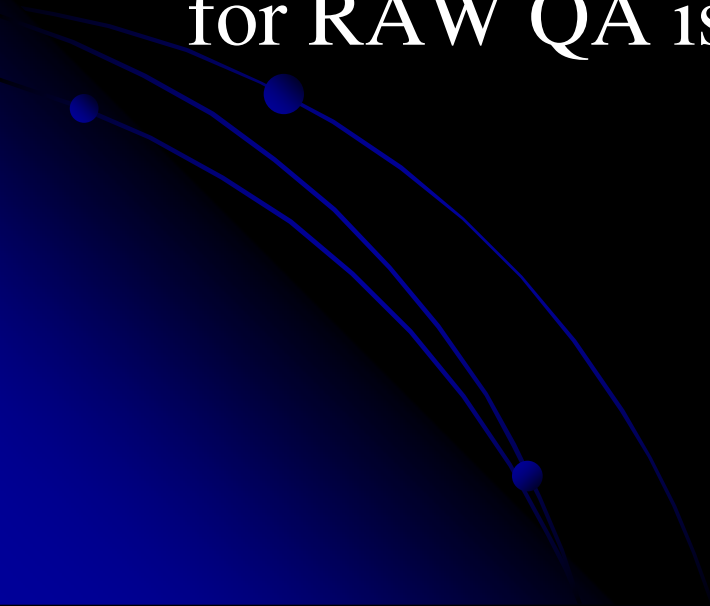
HMPID RecoParams

- Three run types implemented: LowFlux, HighFlux, Cosmics (no Calibration needed)
- AliHMPIDRecoParam steers:
 - Pedestal sigma cut
 - MIP-track matching distance (also prevision for momentum parameterization)
 - Switch between normal and “hidden track algorithm”
- Implemented in AliHMPIDReconstructor and AliHMPIDTracker

HMPID-DA

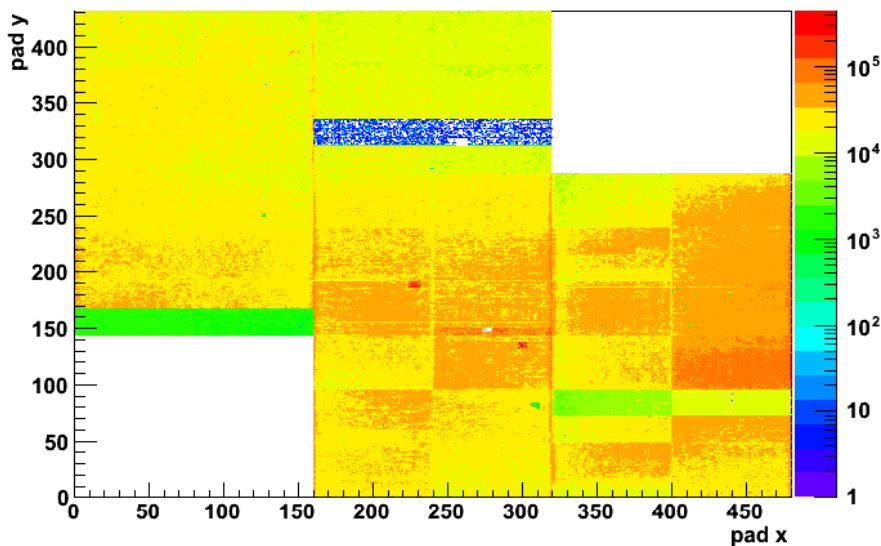
- Dead channel masking has been added
- DA & Calibration class has been extended with mean pedestal and pedestal sigma histograms
- HMPID – DA sends pedestal histograms to AMORE DB
- Fine tuning of the DA-AMORE interface at P2 is in progress

QA status

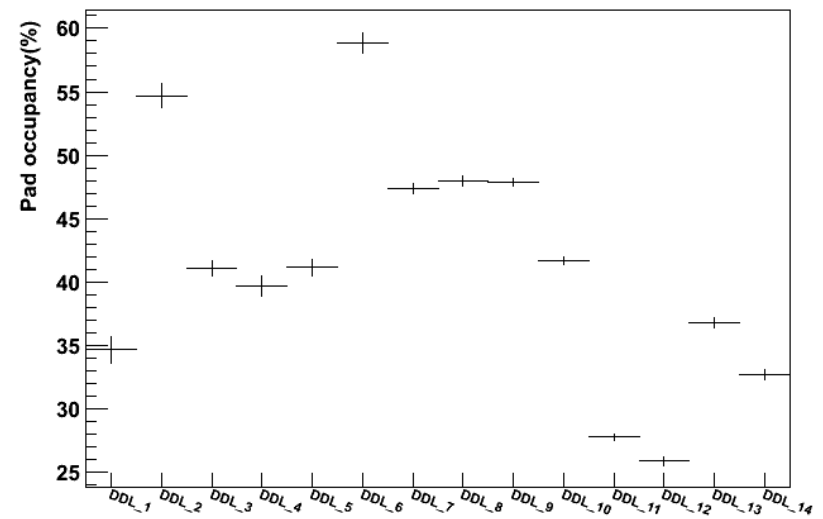
- Review of the offline QA histograms is started;
 - mostly expert histograms;
 - Implementation of summary histograms for RAW QA is done, checks to be updated
- 

QA status: RAW QA for DQM shifter

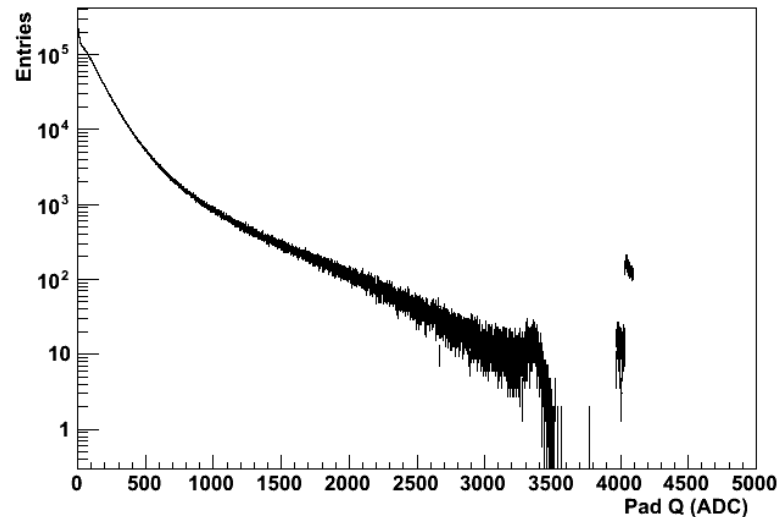
HMP Pad Map



Average pad occupancy per DDL



Pad Charge



Histograms are requested to be ported to release.

Available for DQM shifter from this We.

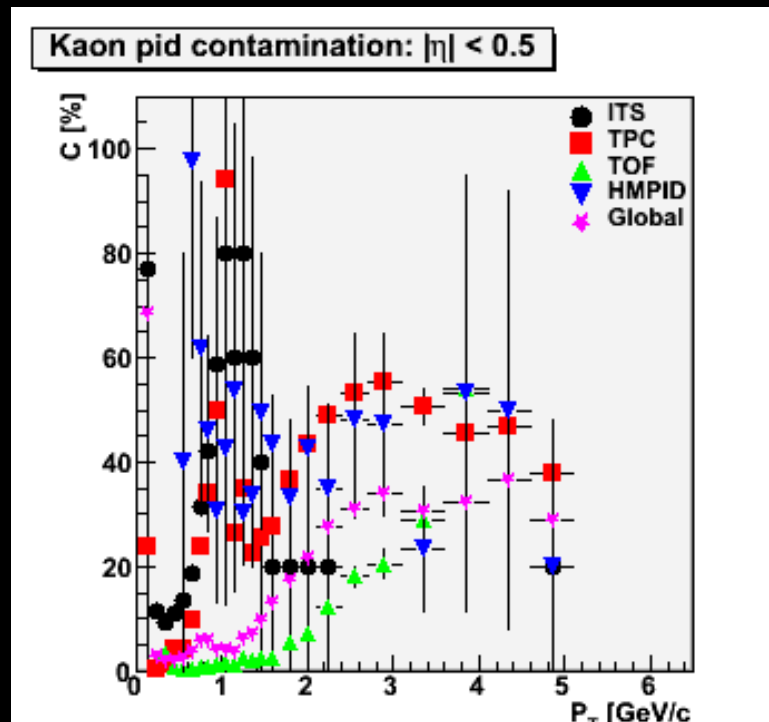
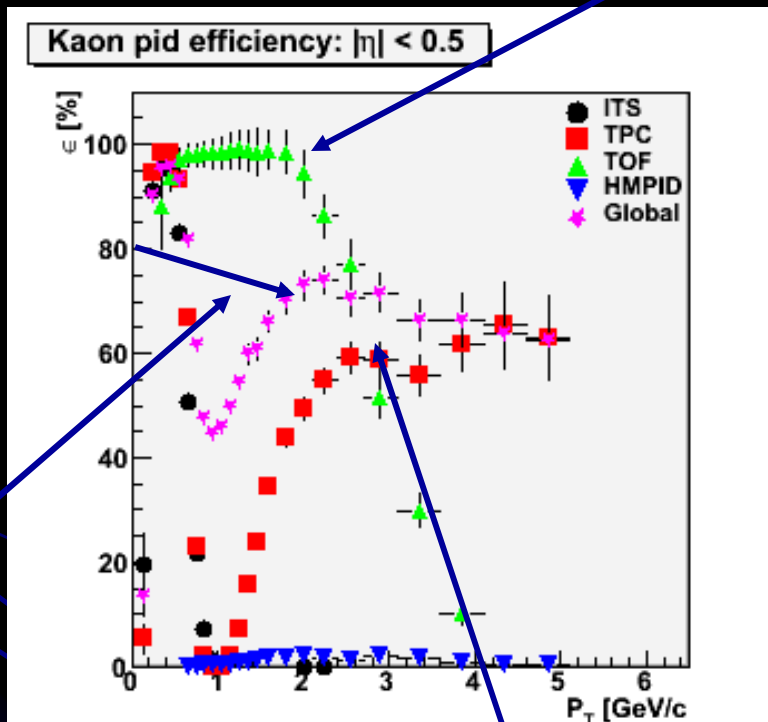
Plots to put in LogBook as summary Image.

HMPID PID performance

<http://pchrist.web.cern.ch/pchrist/alicePrivate/pidAlice.html>

P. Christakoglou

TOF



Combined

ITS/TPC

TPC rel rise

Selection of good tracks for HMPID PID

AliESDtrack *pTrk

pTrk->GetHMPIDSignal() = -22: no intersection with HMPID chambers;

pTrk->GetHMPIDSignal() = -11: no enough photon clusters for the Cherenkov ring reconstruction;

pTrk->GetHMPIDSignal() = -9: no good matching between extrapolated track to HMPID pad plane and MIP cluster (distance cut = 1 cm);

pTrk->GetHMPIDSignal() = -5: matched cluster charge below threshold;

pTrk->GetHMPIDSignal() > 0: reconstructed ring values associated to the track, in this case PID is possible!!

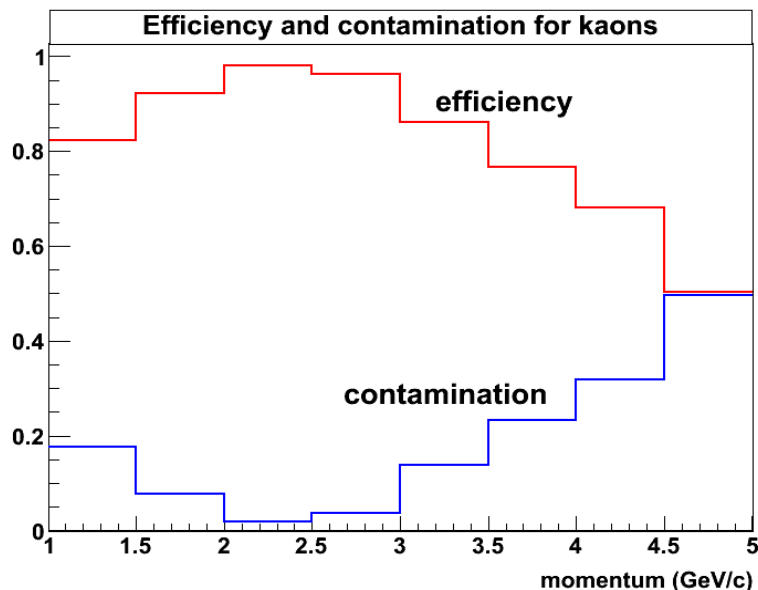
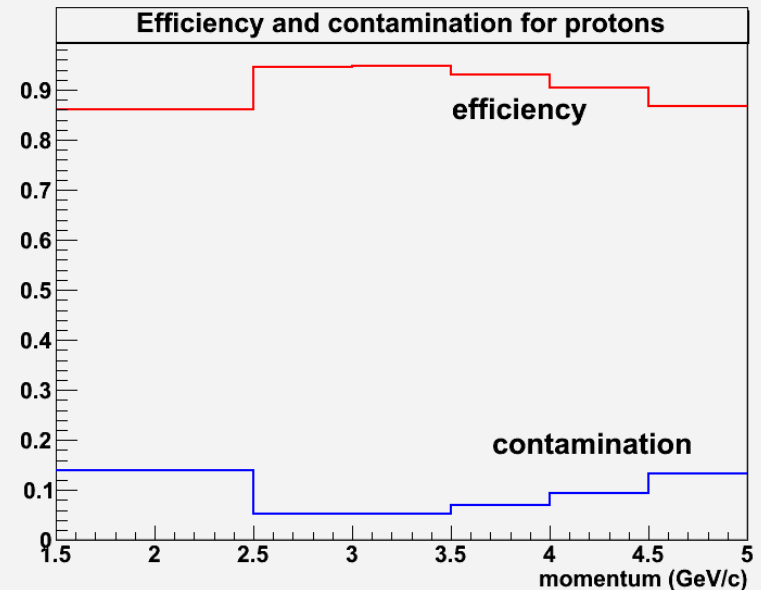
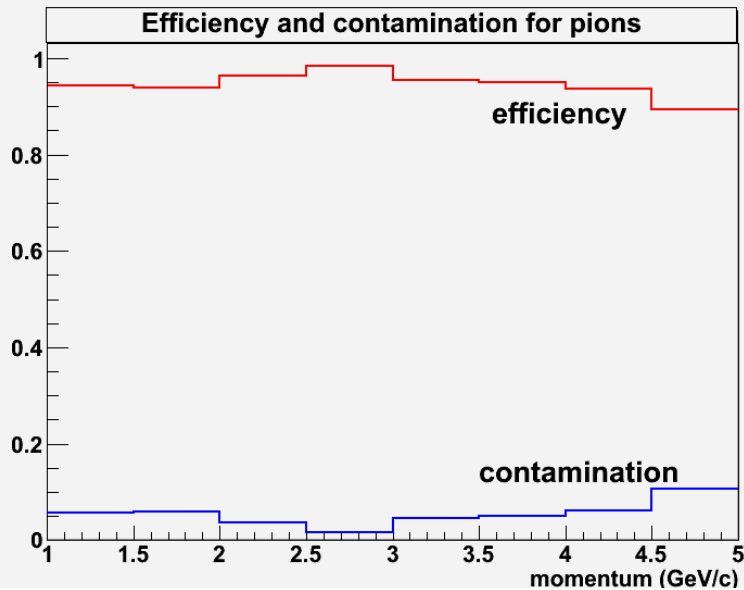
Condition

if((pTrk->GetStatus() && AliESDtrack::kHMPIDpid)==0) continue;

It is not enough to select good reconstructed tracks for HMPID, it is necessary that

pTrk->GetHMPIDSignal() > 0

Results



200 events, guns to the 7 HMPID chambers.

No cuts applied

Aliroot trunk

Expected results!

Results from cosmic central reconstruction

Run 83802



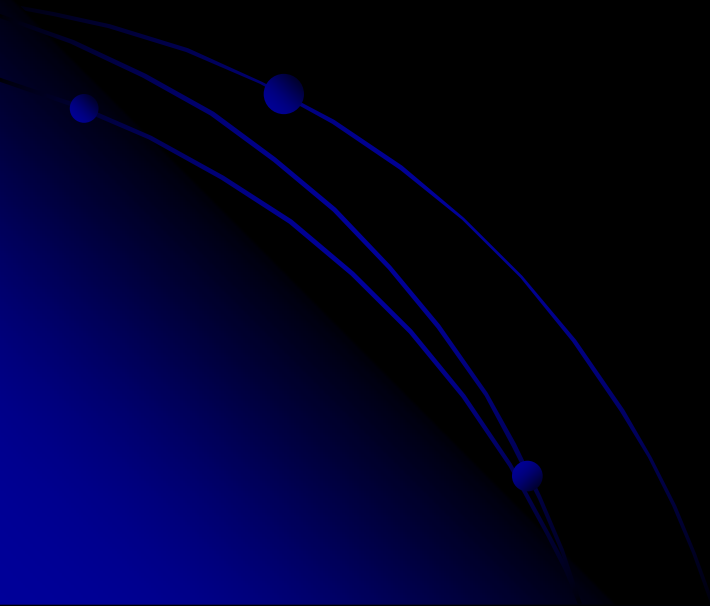
≈ 400 K events

Chambers HV = 1550 V

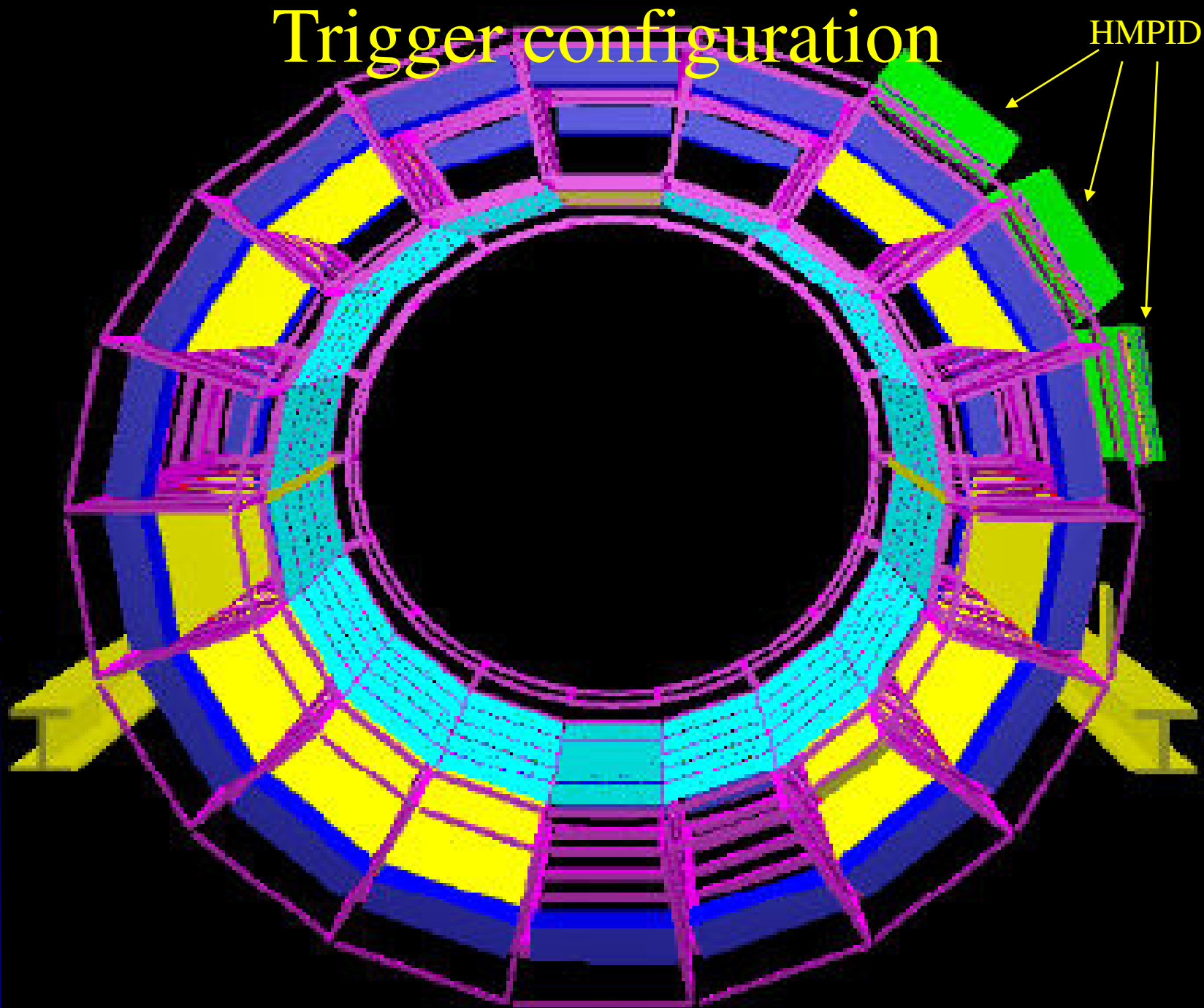
Centrally reconstructed

multiplication gas: argon/CO₂

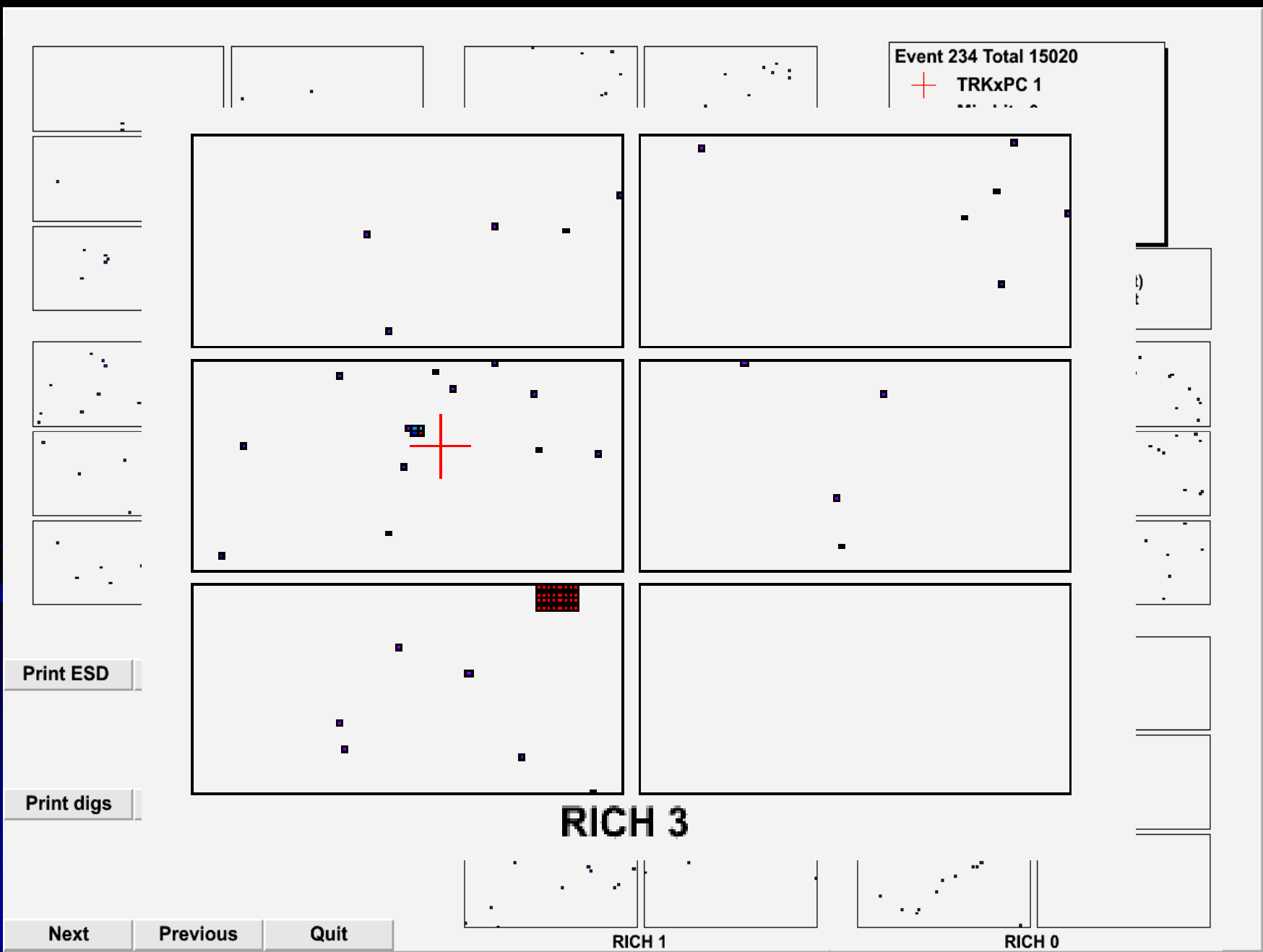
B = 0.5 Tesla



Trigger configuration



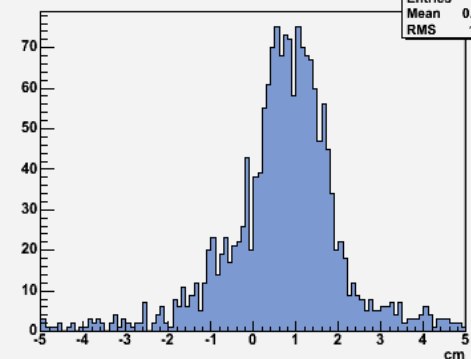
An event display from run 82762



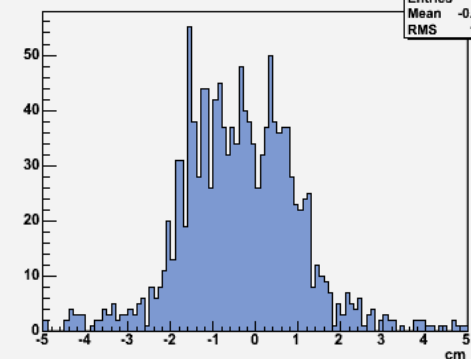
MIP – track matching

$X_{\text{track}} - X_{\text{MIP}}$
distribution

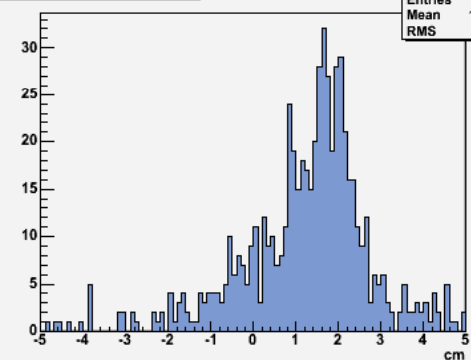
Xmip - Xtrack RICH6



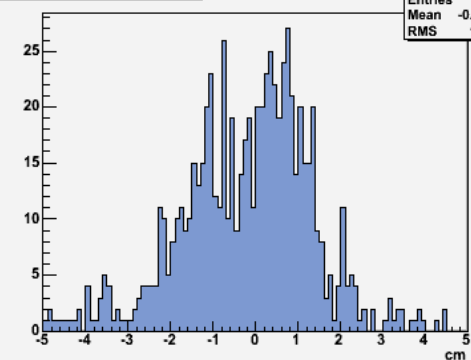
Xmip - Xtrack RICH5



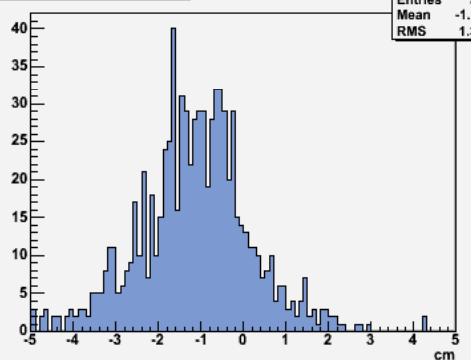
Xmip - Xtrack RICH4



Xmip - Xtrack RICH3

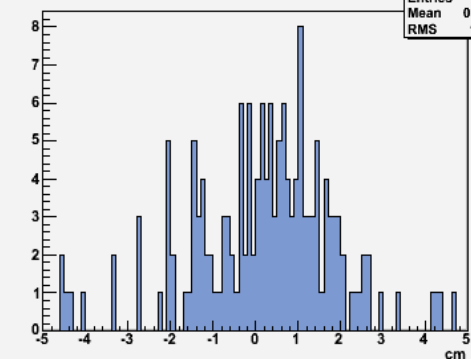


Xmip - Xtrack RICH2

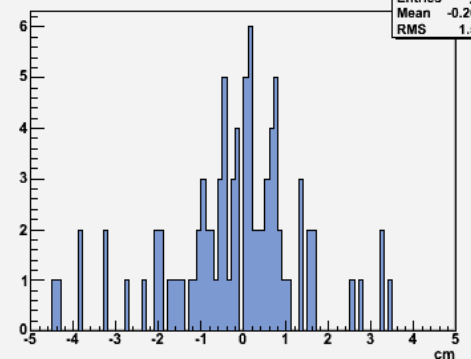


Run 83802

Xmip - Xtrack RICH1

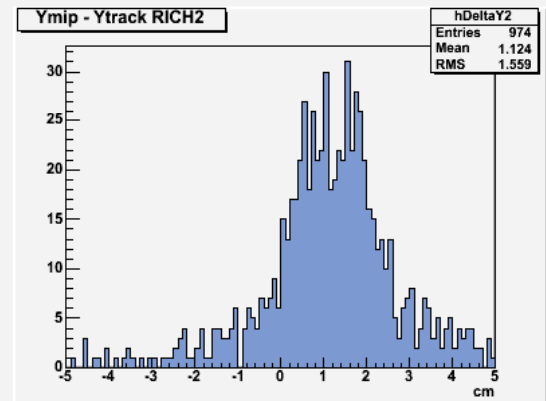
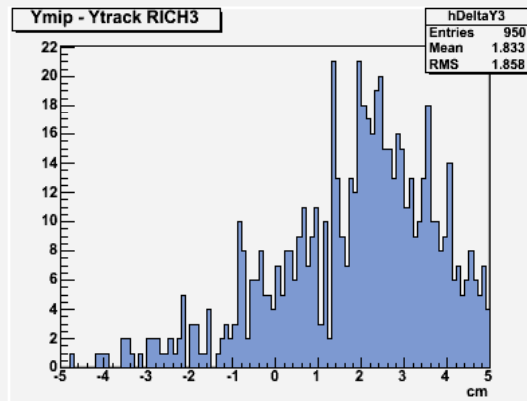
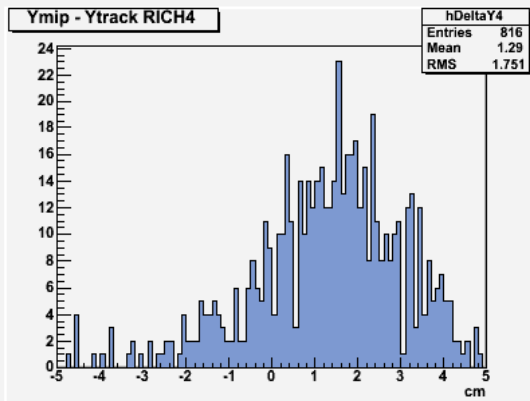
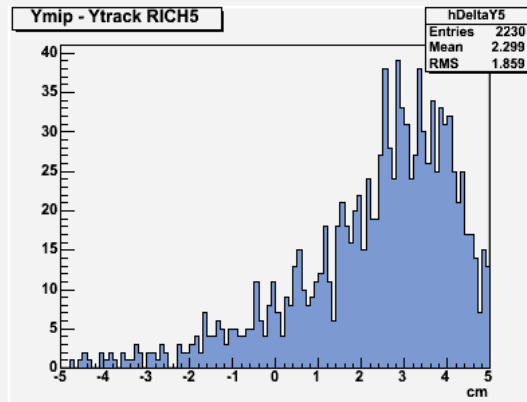
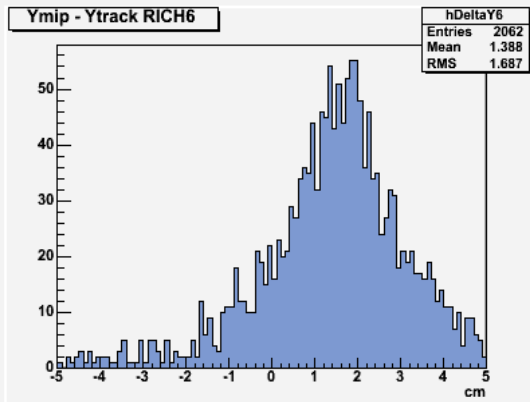


Xmip - Xtrack RICH0

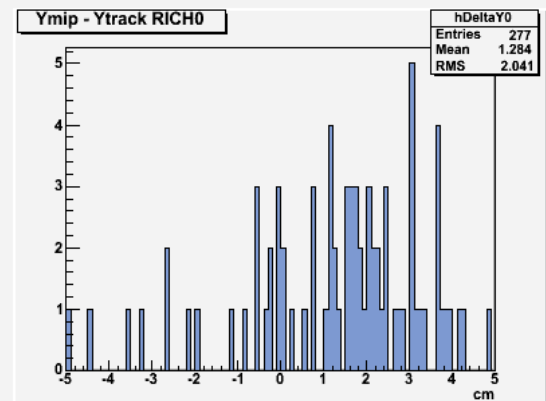
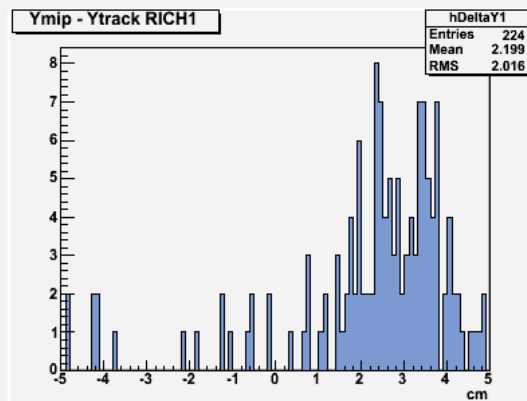


MIP – track matching

$Y_{\text{track}} - Y_{\text{MIP}}$
distribution



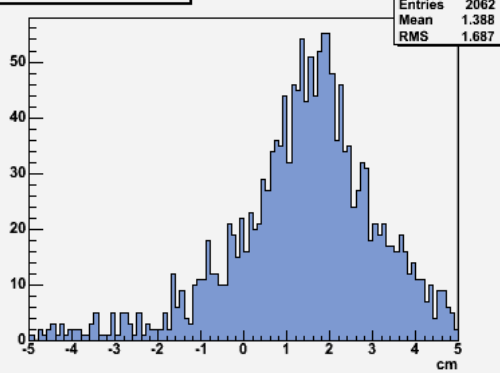
Run 83802



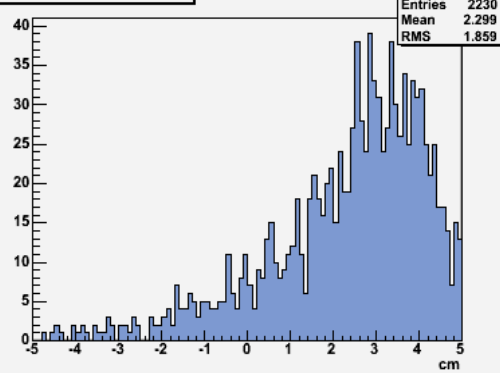
MIP – track matching

$Y_{\text{track}} - Y_{\text{MIP}}$
distribution

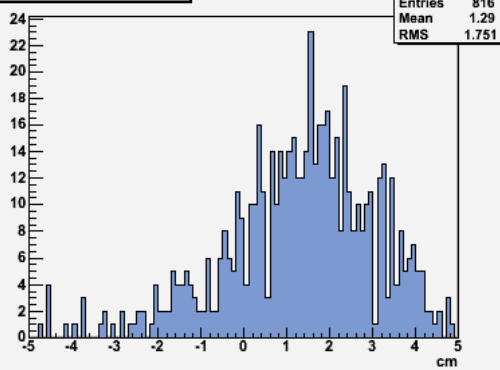
Ymip - Ytrack RICH6



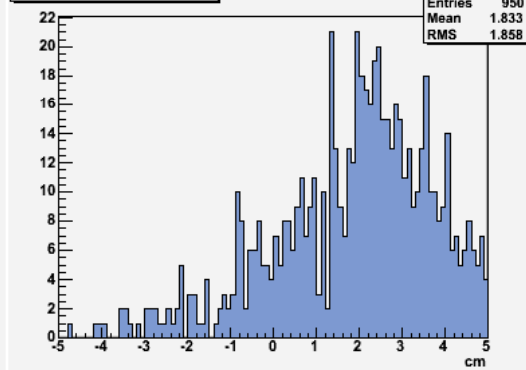
Ymip - Ytrack RICH5



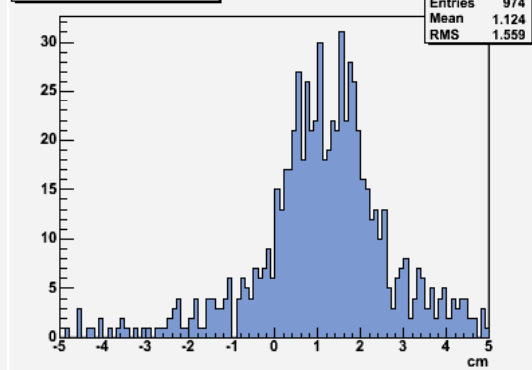
Ymip - Ytrack RICH4



Ymip - Ytrack RICH3

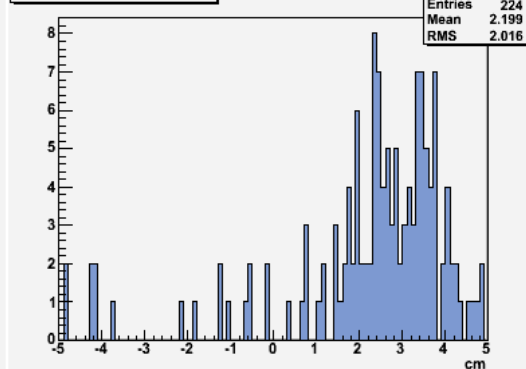


Ymip - Ytrack RICH2

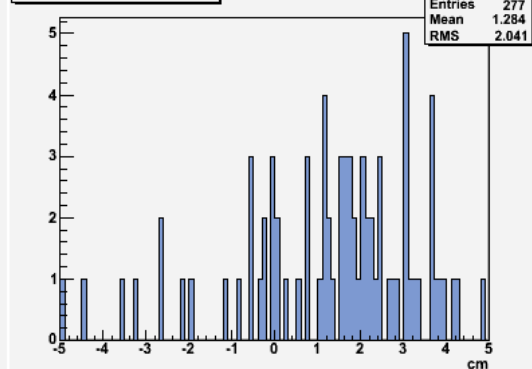


Run 83802

Ymip - Ytrack RICH1

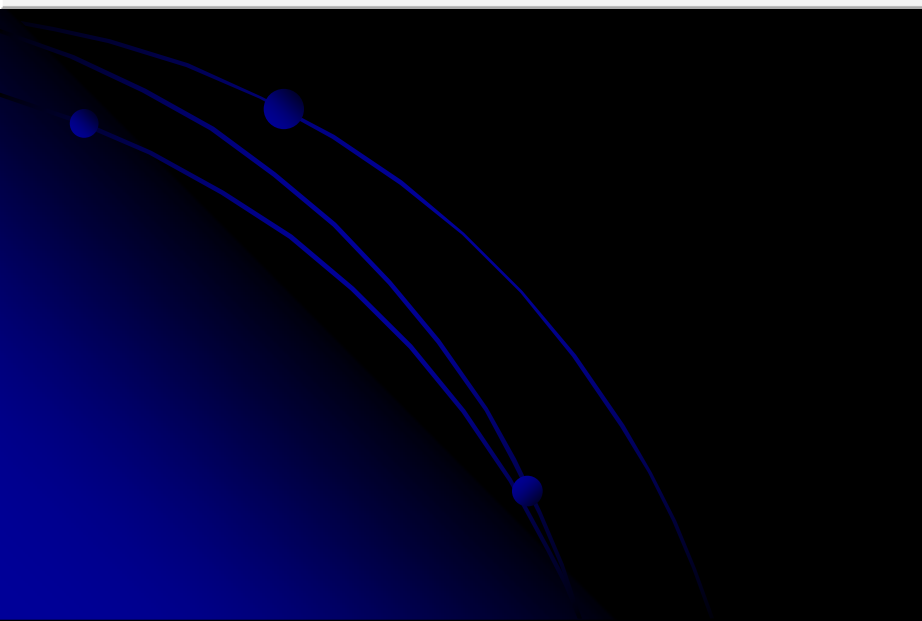
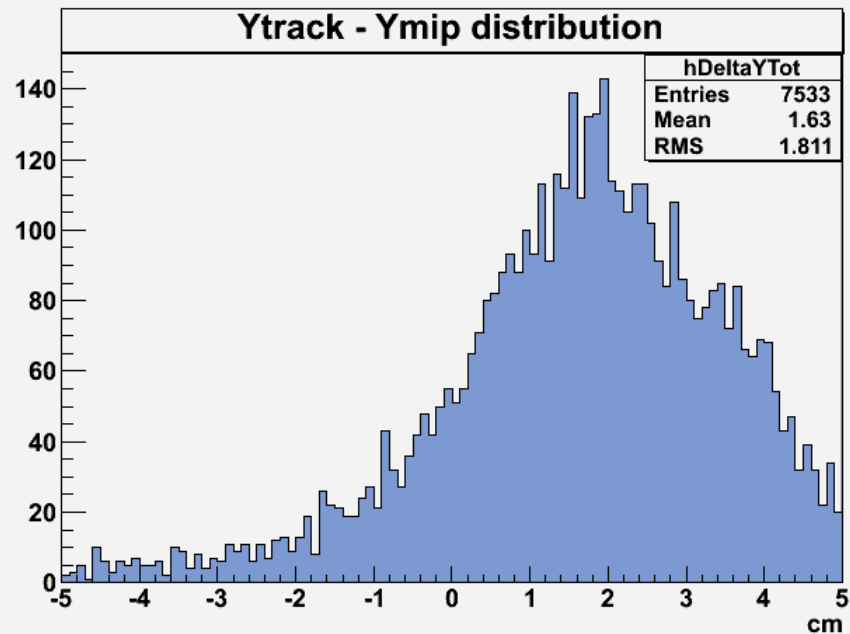
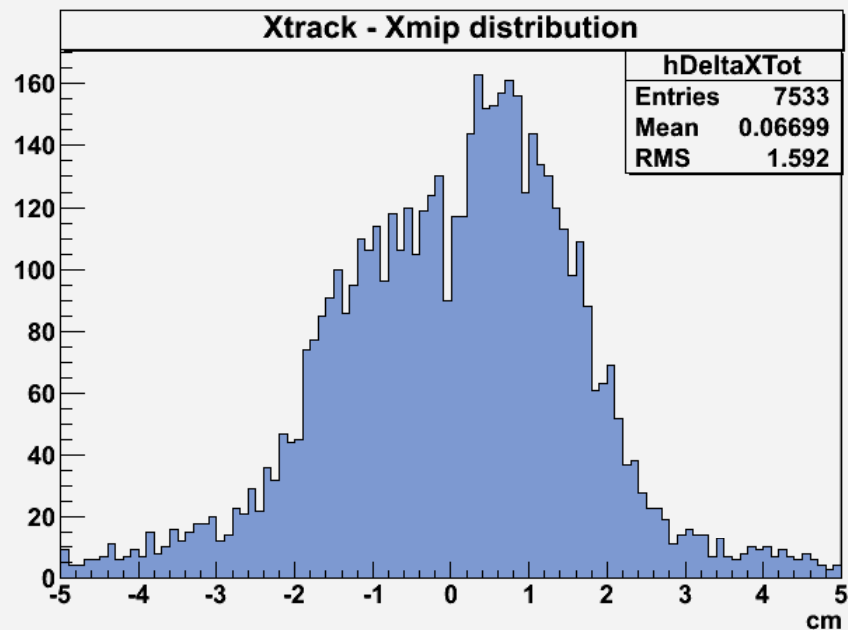


Ymip - Ytrack RICH0



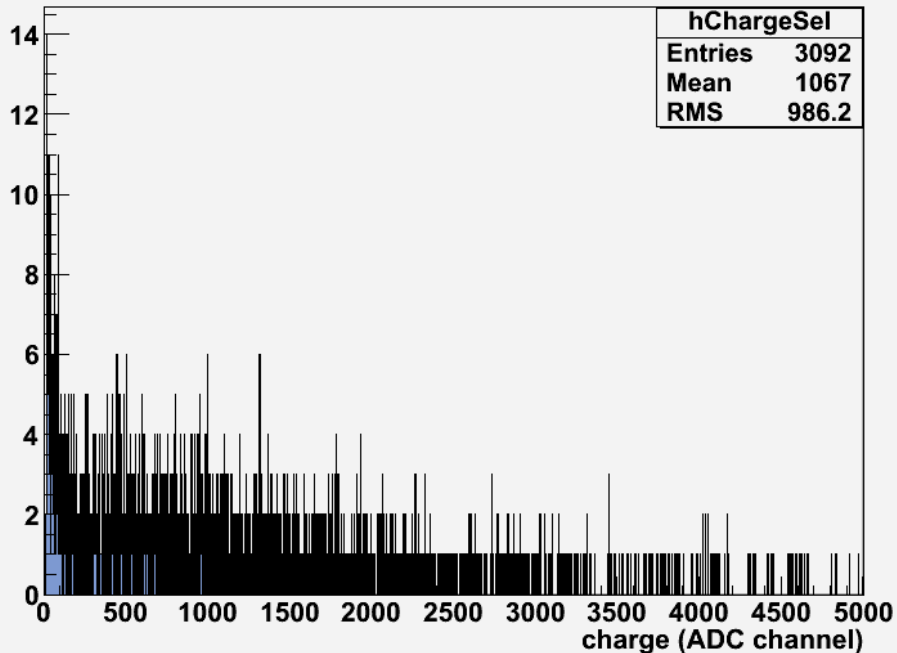
MIP – track matching

Run 83802



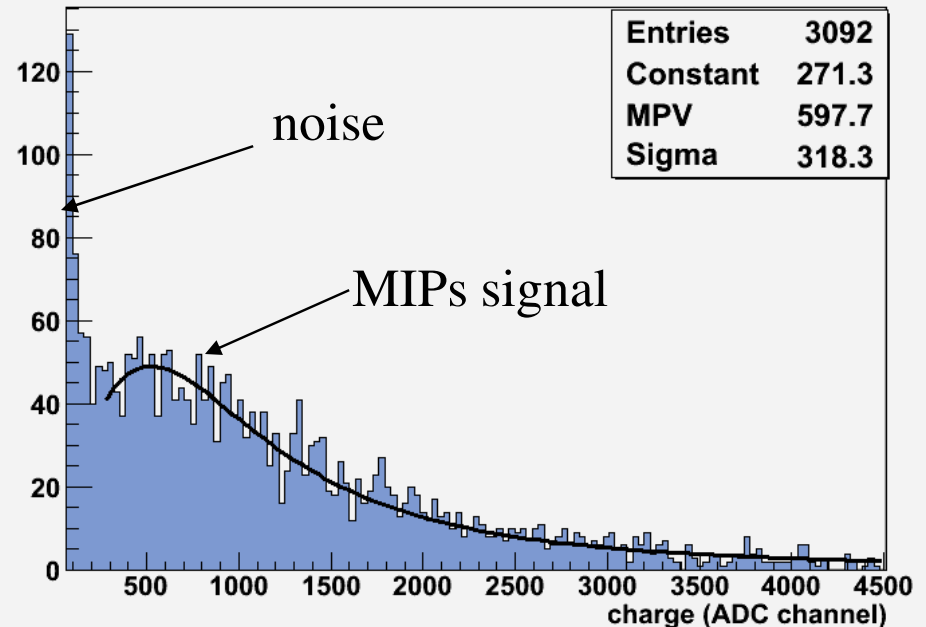
Run 83802

Charge distribution of clusters associated to extrapolated tracks to HMPID



Different bins size

The peak is not present in data with HV = 400 V



Validation procedures for central reco

- Tracks matching;
- charge distribution of clusters matched by tracks (MIPs).

