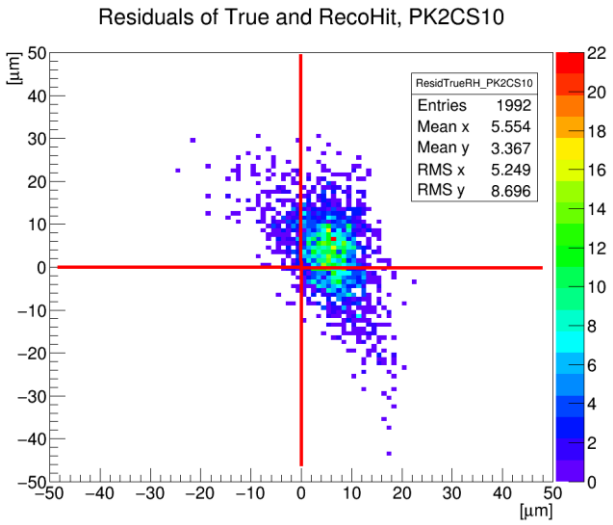
Charles University
Prague

Cluster shape correction in basf2 code

Peter Kodyš, Peter Kvasnička, Charles University, Prague

F2F Tracking Meeting in Mainz, September 18 - 19, 2017

Corrections in basf2 code (1)



Initialization in steering file:

main.add_module('ActivatePXDClusterShapeCorrection')

add_pxd_reconstruction(main)

...

Example:

vxd/examples/DQMPXDClusterShape.py

Set cluster shape:

pxd/modules/pxdReconstruction/src/PXDClusterizerModule.cc

writeClusters(VxdID sensorID)

PXDClusterShape cs;

clsShapeID = (short)cs.setClsShape(cls, sensorID);

Deactivation of corrections:

- now it is not activate in default
- in short time will be activate in default and for deactivation will be create function.

Branch in basf2: master

Corrections in basf2 code (2)

Use correction:

Call correction from DB:

pxd/reconstruction/src/HitCorrector.cc

initialize() --> load corrections from DB to memory on beginning

pxd/reconstruction/src/PXDRecoHit.cc

std::vector<genfit::MeasurementOnPlane*> constructMeasurementsOnPlane(
const genfit::StateOnPlane& state) const

if (this->getCluster() && PXD::HitCorrector::getInstance().isInitialized()) {

call:

pxd/reconstruction/src/HitCorrector.cc

PXDCluster& correctCluster(PXDCluster& cluster, double tu, double tv)

and return modified cluster position and error estimation

calculate new hitCoords, hitCov

and return corrected values.

This function is (should be) call in track finders and track fitters.

Corrections – simulations

1. Any changes on PXD digitizer need recreate corrections, ~3 days of work

Real data:

1. Test beam data, few angles only
2. Phase 2 real data 2018
3. Real data phase 3, 2018-2019

Current status and plan

1. Applying of bias in RecoHit – done
2. Applying of Error Estimation Correction in RecoHit – done
3. Creation of sources – done
4. Creation of corrections – bias: done
5. Creation of corrections – EEC: done
6. Merging of corrections to one file: done
7. Using stand alone file of corrections – done
8. Using conditional database – done
9. Create DQM of ClusterShapeCorrection – done

Further plan:

1. Confirm Corrections with real data from TB – soon
2. Apply flag about probability of existence of cluster – soon
3. Apply advance corrections base on study of Benjamin – beginning of 2018

Thank you for your attention.