TPC Alignment

1. Geometry – alignable parts
2. Influence of the alignment on the calibration
3. New geometry using TGeom
4. Plans

Geometry

Alignable parts:

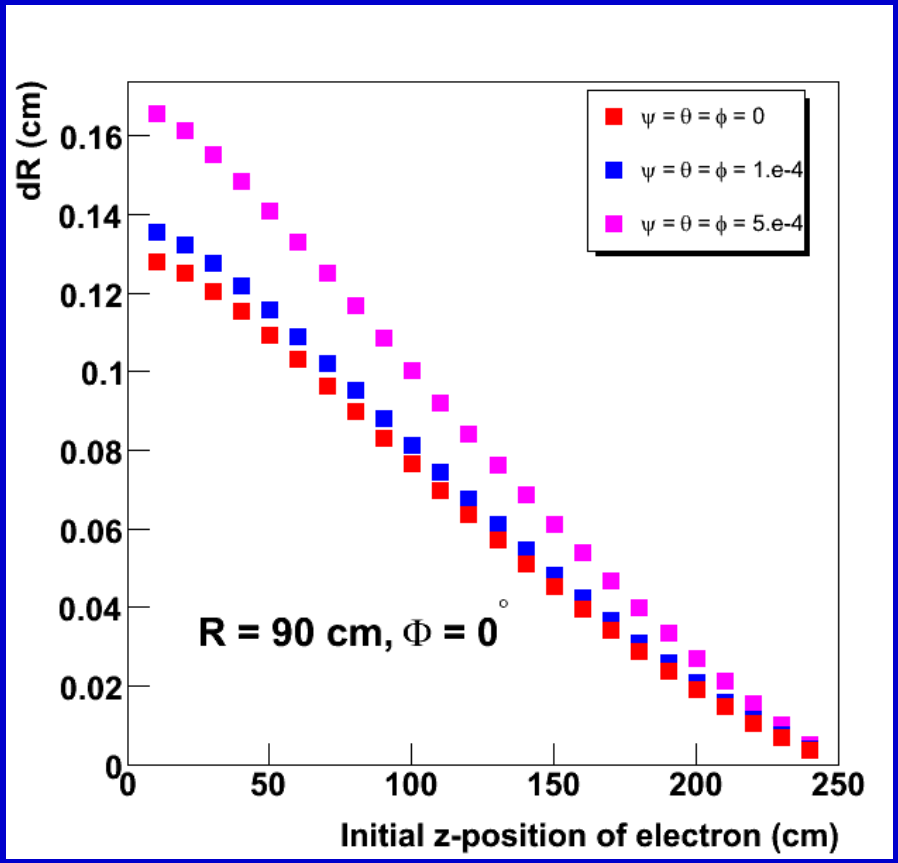
- central membrane
- readout sectors
- the TPC itself in the magnet

In the TPC code alignment-misalignment is applied during the digitization

The alignment of the TPC in the most cases affects the detector calibration

Example:

- rotation of the TPC inceases the ExB distortions
- inclination of the central membrane affects the drift field - ExB



Calculations include nonuniformity of the B-field and the ion pile-up

New geometry with TGeo

The present geometry was written without having in mind the alignment - the alignable parts are not necessarily logically connected

Many dimensions are set as optional parameters

Some of the dimensions have changed since the original design (TDR)

Some materials have changed (slightly)

AliTPCParam class handles too many optional parameters which now are fixed

Rewirite the geometry, using TGeo

It’s easier to control the alignable parts.
It’s easier to control overlaps, intrusions and extrusions.

Plans

1. Finalize the rewriting of the geometry
2. Introduce the misalignment of the chambers & CM
3. Introduce the shift & rotation of the whole TPC
4. Revision of the AliTPCParam class
5. Develop alignment algorithms (already started)