Examples of current problems w.r.t. alignment
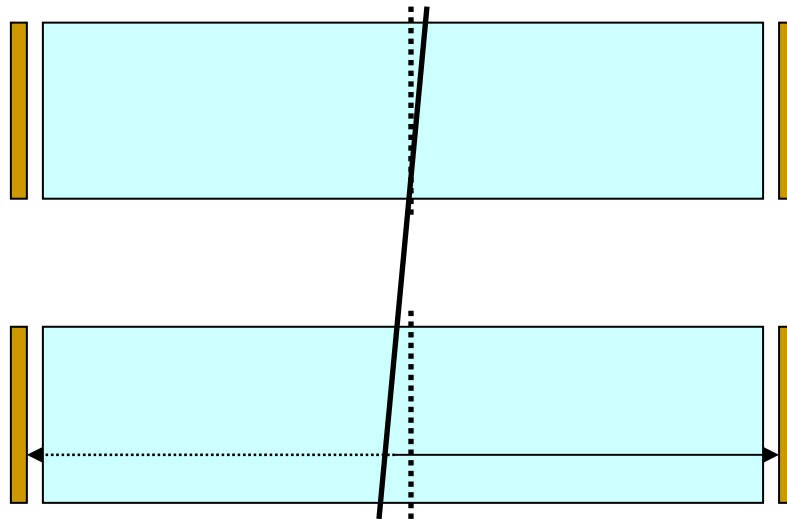
Kind of problems

- Suiting digitization and reconstruction to deal with real geometry is a potential source of many problems, beyond the awareness of the right geometry

- First appeared of such problems, arised having a look at some discussion with and some trial in some detector, are presented here as first reference.

Kind of problems

- **First of all:** substitute parametrized positioning of alignable object with queries to TGeo

- In detector digitization and reconstruction code take correctly into account different reference frames (e.g. in TPC $(x,y,z) \rightarrow (x,z,y)$ on one endplate, $(x,-z,y)$ on the oder: left-handed). Choice of the most convenint tracking coordinate system can be problematic.

- To introduce aligned geometry in the digitization-reconstruction can imply to go from a 2D problem to a 3D one (e.g. in TPC the z-coordinate of the readout chambers, considered fixed, never entered the calculations ⇨ it has to be added)

Kind of problems

- Moving some volumes can completely change the hits-to-digits procedure in same case: e.g. the case of a TPC with a misaligned central membrane.

Kind of problems

- Decoupling of alignment and calibration is not always straightforward: e.g. In TPC ExB effect results from the composition of many factors among which volume positions. If it is a linear combination of those factors fine, otherwise ...

- Other problems can be foreseen, anyway trying sim/rec with misaligned geometry and looking at what happens will raise by itself a lot of them

- Interaction alignment framework/detector alignment is essential for improving both sides.