

Introduction to the alignment session

- ⇒ What is alignment
- ⇒ Main requirements
- ⇒ Aim and scope of alignment session

What is alignment

Alignment is the effort towards the best possible knowledge of the real detector geometry. Two main kinds of alignment input:

- ▷ positions' data from survey;
- ▷ optimization of positions from alignment procedures using tracks

Detector geometry is used at different steps:

- ★ to simulate interactions of particles with detector (hits)
- ★ to simulate detector response (digits)
- ★ to reconstruct tracks from detector response

All these steps have to be based on the same geometry.

Main alignment offline-requirements

- ★ To be able to deal with a non hard-coded geometry (dumping to and retring geometry from file)
- ★ To let all the simulation and reconstruction algorithms use the same geometry
- ★ To have a powerful Geometrical Modeler (Andrei's presentation and tutorial session)
- ★ To be able to deal with problems arising from a non-ideal geometry
- ★ Finally: to have good alignment procedures

ALICE: state of the art

- ★ With TGeo, transport can use an alignable geometry ... but digitization and reconstruction use different, hardcoded, parametrized geometry.
- ★ We have tried some examples → possible problems have emerged
- ★ AliRoot needs to complete the transition to TGeo
- ★ The alignment framework in AliRoot is developing but needs detector work (most of the needed steps are detector-specific).
- ★ This session is **the** good opportunity to build firm bases (someone said: *“I don't know if there will be another **alignment session** but if so it will be an **alignment conclave**”*).

Aim of this alignment session:

- ★ Let everyone be aware of the tools already available for:
 - handle the geometry (TGeo) and in particular
 - dump geometry to (load geometry from) file;
 - align volumes inside AliRoot.
- ★ Consider the possible strategies to implement alignment in AliRoot and understand together which fit at best our needs.
- ★ We thus expect detector people to consider and communicate their requirements and ideas w.r.t. alignment during this Offline Week.