


Global Alignment Constants

Jim Pivarski

Texas A&M University

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Global alignment constants

Global alignment constants define a coordinate system for each major detector in CMS: tracker, ECAL, HCAL, muon barrel, and each of the two muon endcaps, so that internally-aligned detectors can all be aligned to a single global coordinate system.

(This implementation is a combination of suggestions from Andrei, Frederic, Rainer, and myself.)

- New record, GlobalPositionRcd, in CondFormats/AlignmentRecord which would store an AlignTransform (6 numbers describing a translation and a rotation). This record will contain an entry for each of the major detectors.

- Change "applyAlignments" to require alignment constants and GlobalPositionRcd

  1. Applies alignments (as before)
  2. Shifts and rotates whole system with appropriate GlobalPositionRcd entry

- Need to change every geometry producer, because GeometryAligner::applyAlignments now requires GlobalPositionRcd
- Compiler will find all instances
- Corresponding implementation for ECAL and HCAL would need to be done by someone with more expertise. We will leave the ECAL and HCAL entries in GlobalPositionRcd as place-holders for the future.

Status

- Settled on an implementation; I need to write it!