

The Importance of Immutable Detectors

Norman Graf (SLAC)
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lcsim Detectors

- For more than two decades, the lcsim software suite has been used to design and study an uncountable number of detectors
- Detectors have been studied at ILC, CLIC, FCC, CEPC, multiple testbeams and other disciplines
- The detector geometry for all applications (simulation, reconstruction, event display, etc.) was derived from one common source and identified by name.
- A basic tenet has always been that a detector was immutable once released.
- The name of a detector was its provenance.

HPS PR #1001

- HPS has abided by this prime directive since its inception over a decade ago.
- The recent merger ([PR 1001](#)) breaks this tradition and makes analysis of any of the simulation and reconstruction work done to-date on the 2019 and 2021 data sets tricky to analyze.
 - This includes both pass0 reconstructions.
- The detector you get after this merger is not the same that was used before.
- The detector name is no longer a unique identifier.

What should have been done

- This major change should have been discussed in an open meeting with sufficient prior notice.
- The compact.xml files for those detectors affected by the geometry bug should have been modified such that the geometry after the code fix was identical to that before.
 - Analysis of four years of simulation and reconstruction would have been unaffected.