


Alignment Triggers

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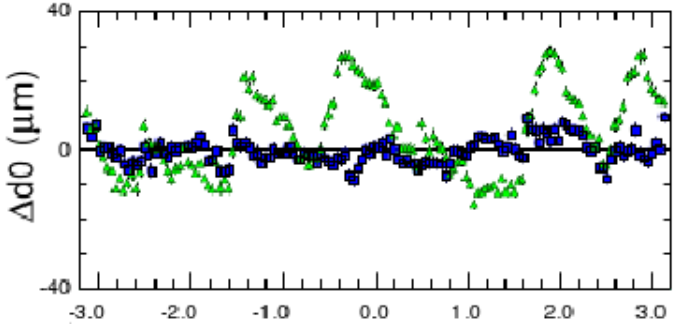
List of triggers used in alignment

- Single-muon, double-muon: selected from physics events in Express Stream (probably no extra work needs to be done)
- Cosmic rays for tracker and muon barrel alignment (common trigger shared with calibration)
- Beam Scintillation Counter: beam-halo trigger for tracker
- Beam-halo trigger for muon endcap
- "Wide-open" single-muon for pre-collisions data

Cosmic ray trigger

- L1 bit in trigger menu? HLT path written?
- 25,000 muons ($p > 50$ GeV) in ~2 weeks (Martin Weber)

Plots show the effect of alignment with cosmics (blue) and without (green)



- Can't collect collisions and near-IP cosmics simultaneously
- Cosmics-only for 1 hour per day? (Rainer Mankel)
- Simulations underway for reliable rate estimates (Gero Flucke)

Beam Scintillation Counter (beam-halo for tracker)

- L1 trigger exists and is in the L1 menu (Wesley Smith)
- L1 emulation code exists but needs to be integrated
- HLT path not written
- Contacting: Richard Hall-Wilton, Vincenzo Chiochia
- Rate *probably* won't exceed 1–2 Hz (Didier Contardo)

Muon endcap beam-halo

- L1 trigger bit is in Global Muon Trigger (Ivan Mikulec), but still testing full chain (Darin Acosta)
- L1 emulation code written (Joe Gartner)
- HLT path not written
- Rate? unknown

(Nominal LHC beam-halo production: 15,000/sec/beam ⁑10)

"Wide open" single-muon

- Before first collisions, widen single-muon trigger by requiring only one LCT (Darin Acosta)
- If too loose, require two, but with a very wide road
- Collect everything: including cosmics and beam-halo for alignment
- Single-muon L1 bit and HLT path already established?

Questions from the detector groups

- Who needs to make the HLT filter to select L1 bits?
- How is this done/tested?

Conclusions

- Most L1 bits have been implemented
- But HLT filters to select those bits have not
- Alignment trigger rates are difficult to estimate because they depend on external conditions (beam-halo, cosmics)
- There are people working on emulation and rate estimates, and I am learning who they all are
- HLT filters are not under development: who is responsible? Can TSG supply templates?