



# HLT Trigger Review (Practice Sketch)

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- ▶ Triggers needed for alignment
  - ▶ muon: majority of muons for long-term alignment project, parasitic with physics muon needs, existing triggers satisfy our needs
  - ▶ cosmics: important for identifying and reducing dependence on tracker misalignment, only need tracker-pointing cosmics, parasitic with tracker alignment needs
  - ▶ beam-halo: important for early alignment of the muon endcaps
- ▶ Alignment reach...
  - ▶ with collisions muons: CSA08 results and projections for 200-300  $\mu\text{m}$  alignment
  - ▶ with cosmics: CRAFT results and projections for more complete coverage of muon detector (we'll never reach all the chambers since horizontal cosmics rate is zero)
  - ▶ with beam-halo: September 2008 beam-halo alignment results
- ▶ How often do we need to align? Not often: show statistical reproducibility of four CRAFT 3.8 T runs, separated by magnet ramp-downs (and therefore relaxation of the system)



- ▶ Structure of requested triggers
  - ▶ Collisions muons and cosmics covered elsewhere (thanks Andrei)
  - ▶ CSC beam-halo triggers:
    - ▶ HLT\_CSCBeamHalo: everything that passes L1
    - ▶ HLT\_CSCBeamHaloRing2or3: requires level 2 CSC RecHits in ring 2 or 3, important because beam-halo distribution is *variable* (show plot) and peaked in ring 1— we may need to prescale ring 1 and not rings 2 or 3
    - ▶ HLT\_CSCBeamHaloOverlapsRing1, Ring2: requires muon to overlap two CSCs, determined with level 2 CSC RecHits only (no tracking), rate is about  $50\times$  less than whole HLT\_CSCBeamHalo rate
  - ▶ Computation time of CSC beam-halo triggers: quote MinBias (background) rates given in trigger menu table, signal rate is of course unknown. . .
  - ▶ Monitoring
    - ▶ CSC beam-halo monitoring covered by Joe Gartner, U. Florida
    - ▶ Plots of L1 bit rates exist (show them), expanding to HLT paths
    - ▶ Currently works on real data, can be made into a DQM routine and used in release validation, but isn't yet