Common Reconstruction

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SDHCAL reconstruction

- Time clustering reconstruction (Trivent)
- Remove noisy evt ("square" evt, too many/few hits, etc.)
- Produce root tree with following branches: (1entry per reconstructed event)
  - Note that all BCIDs are in 5MHz clock

- **DetId**
- **TrigNum** - Since Start of run
- **EvtNum** - Since Start of run
- **TrigBcid** - Since Start of run
- **TrigLength** - Acquisition time
- **EvtBcid** - From end of trigger
- **EvtRevBcid** - From start of trigger

- **NHits**
- **HitI/J/K** - Pad/Layer
- **HitX/Y** - mm from bottom left corner of hcal
- **HitZ** - mm from 1st ecal slab
- **HitBcid** - From start of trigger
- **HitThresh**

Details on variable

- **TrigBcid** = Absolute BCID (reassembled value from the raw data = value[4] * 16777216ULL + value[3]) See Gerald's slide for definition of value[]
- **TrigLength** = value[2]
- **HitBcid** = RawCalorimeterHit->getTimeStamp()
- **EvtBcid** = **HitBcid**
- **EvtRevBcid** = **TrigLength** - RawCalorimeterHit->getTimeStamp()

Selection

- Ecal
  - Muons files from `offset_twiki/Muon_200GeV/*__build.root`
  - Only cut is `nhit_slab > 3`
- Hcal
  - Geometrical cut on the CoG of the event to be within ecal surface
    - **x** $\in$ **[225, 401]**, **y** $\in$ **[377, 553]**
  - **Nhits** $>$ **20**

Algo

I assumed that the ecal bcid has been corrected and is in 5MHz clock unit

- Iterate **TrigNum**/ **spill**, assert **TrigNum**== **spill**
- Make a tuple of hcal/ecal evts with **abs(hcalRevBcid-ecalBcid)** $<$ **100 clocks**
- Iterate through these tuples and display candidates

Results

- No more than a handfull of candidates per run
- No candidates after a few hundres trigger/spill
- No candidates with hits in slab 3 to 6 of ecal! (clock issue?)
- No obvious constant bcid shift between ecal/hcal

Event Display