Current status

- Jamie's comment at Mattermost
  - It is great that cosmics are being taken with INTT now. For the INTT update in the SCM, can some results from these cosmics be shown -- are they useful, what is being processed / checked?
  - Also, early in the run, we will want to have INTT information on the beam position distribution. In pp collisions, it makes sense that one cannot reconstruct a beam x,y,z position reliably. Is one only wants the distribution over events, can that be done in pp? Can that only be done with field off - even for z? It will be important to have these capabilities with a fast (one day type) turnaround to get information for the MBD z-offset confirmation as well as information on the beam itself for C-AD
- Cosmic QA and Vertex determination are necessary in short time scale
  - Cosmic : Jaein, WeiChe, Joseph and more
  - Vertex determination : ChengWei developed the vertex code
    - Mahiro also worked for Z-vertex calculation w/ PYTHIA (p+p) & Boff
      - Same with what ChengWei developed and some additional work

ChengWei's vertex code

- Vertex Calculation X-Y (INTTXYvtx.h)
  - Tracklet reco from Inner and outer clusters
  - Accumulate 20k events
  - Culculate X-Y vertex w/ quadrant method

- Vertex Calculation Z (INTTZvtx.h)
  - event by event
  - Tracklet reco from Inner and outer clusters
  - Culculate Z vertex w/ the weighted method by the strip length

- Transferring (copy & paste) his code to F4A is an easy way. I think it is OK for now. But I am also thinking to combine his vertex codes and INTT tracking code (such as the code Hinako developed)
- In short time scale, transferring (copy & paste) his code to F4A
- In mid-time scale, transferring (copy & paste) his code to F4A

Software structure under development/consideration

- Data tables
  - Tracklet (cluster pair)
    - 3D-cluster positions for inner and outer,
    - 3D tracklet vector (can be 3D momentum vector)
    - Quality variables, such as Chi2 from track fitting (2 clusters + 1 Vertex)
  - Vertex
    - 3D vertex position w/ error
- Modules
  - Tracklet Reco
    - Input vertex position (0,0,0 at the beginning)
    - Choose good tracklet using dphi, d-eta, ADC, cluster size and so on
  - Vertexing XY & Z
    - Quadrant method for XY
    - Weight method for Z
  - Tracklet Fitting
    - Straight line fitting to 2 clusters and 3D VTX position (in X-Y and R-Z space)
    - Choose good tracklets using quality variable (chi2/ndf or so)

Code in INTT repo

Current

- Module
  - INTTVertexFinder.h/cc
    - I wrote F4A module to calculate Z-vertex last September
- Data
  - InttVertexMap(v1).h/cc
    - InttVertex : double z

Plan

- Module
  - InttTrackletFinder.h/cc
    - Tracklet
  - INTTXYVertexFinder.h/cc
    - **Transfer ChengWei's algorithm**
  - INTTZVertexFinder.h/cc
    - **replaced by ChengWei's algorithm**
  - InttTrackletFitter.h/cc
- Data
  - InttTrackletMap(v1)
    - InttTracklet:
  - InttVertexMap(v1).h/cc
    - InttVertex : 3D vertex point