Decoder update

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Decoder issue

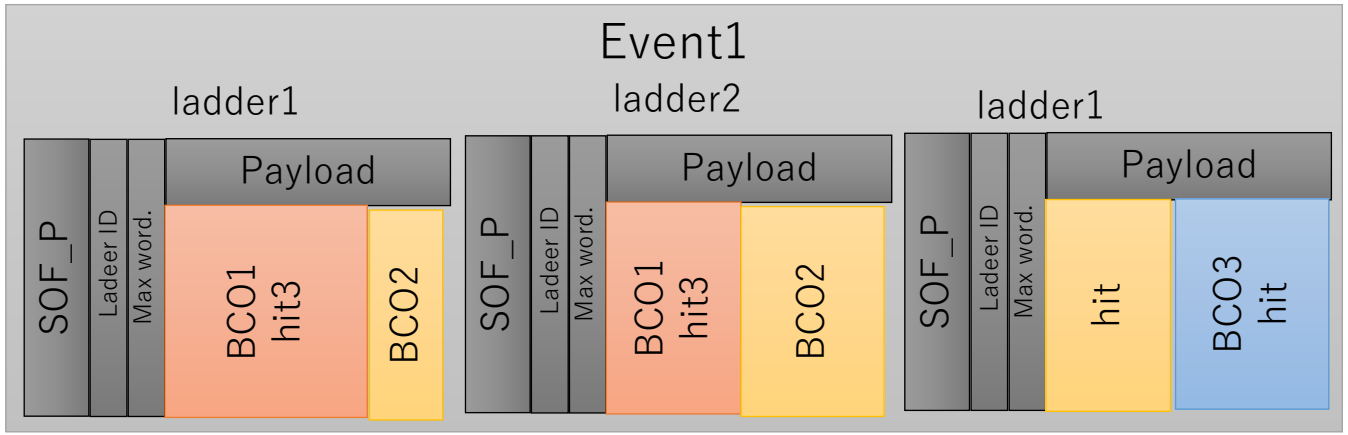
I reported the raw data decoder had issue

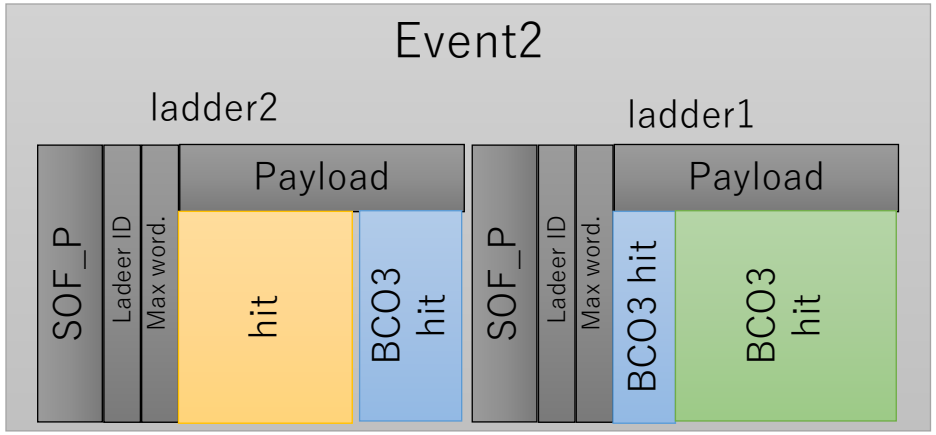
- BCO_FULL is mixed in one EVT event
- There are missing hits after decoding the raw data
- The event counter and footer was not taken into account

- After reported, the decoder was updated but some issue still remain.
  - There are missing hits and missing BCO_FULL
  - The cause of the issue remained is that the decoder cannot handle the hit among multiple events.
  - Raul said Martin knew this issue

- I made a private version of the decoder

The cause of the problem





- Hits in BCO1 spread into 2 packets in Event1.
  This can be decoded
- On the other hand, Hits in BCO2, BCO3 spread into two different events, Event1 and Event2.
  The decoder cannot handle this case.
  - My decoder can handle this.

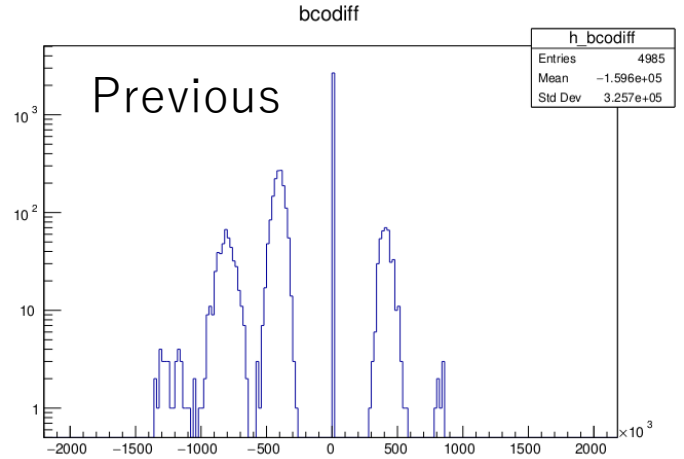
```
Event *e=nullptr;
while(e=evtItr->getNextEvent()){
    Process_event(e);
}
```

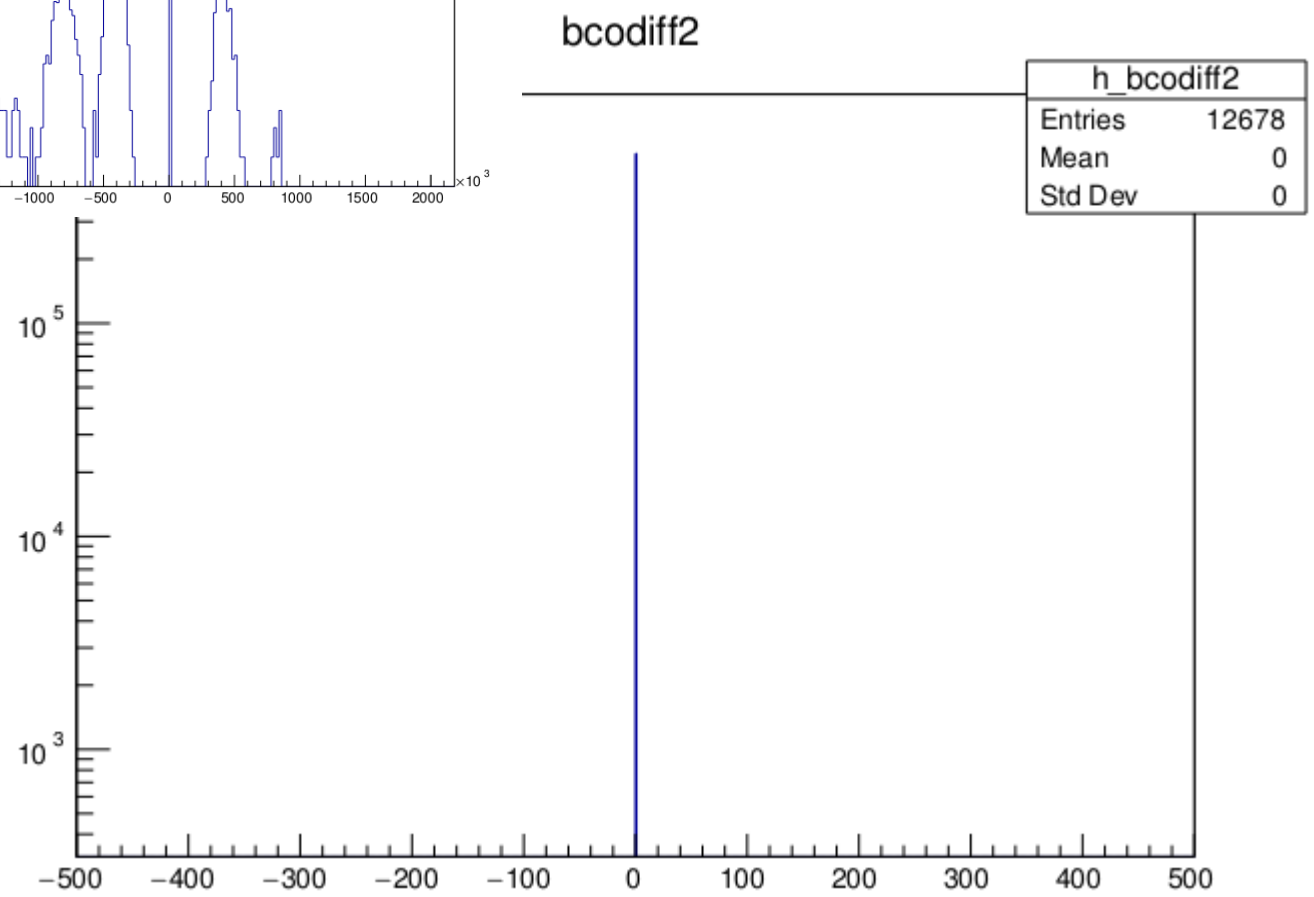
```
int Process_event (Event * e)
{
    inttEvt->evtSeq = e->getEvtSequence();
    cout<<"type : "<<evtType<<" "<<inttEvt->evtSeq<<endl;

    Packet *p = nullptr;

    for(int id = 3001; id < 3009; ++id)
    {
        p = e->getPacket(id);
        if (p)
        {
          int N = p->iValue(0, "NR_HITS");
```

BCO_FULL variation in an Events





- Issue of BCO_FULL variation is fixed now by my decoder.

8 FELIX output synchronization

- 8 FELIX generate each EVT file -> converted to ROOTFILE (event_based tree)
  - It’s not easy to analyze same BCO_FULL events in these 8 files.

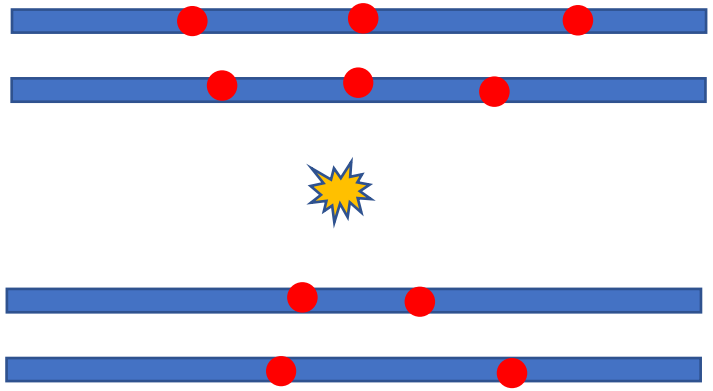
- I made a code to synchronize the BCO_FULL from these files.
  - InttEventSync class
    - Opening 8 files which contains InttEvent data
    - Synchronize same BCOFULL from each file and combine into single InttEvent
      - This means that my analysis code works without any change.

  - ~/INTT/hachiya/convertInttRaw/test2/analysis

  - To do this, the code to generate the event base tree is also updated
    - The event based tree is generated with the updated version

Summary

- I made a decoder. This looks working fine.
  - I am working with Raul to investigate INTT1 issue. INTT1 produce huge amount of data
- BCO_FULL variation in event is fixed
- 8 files synchronization
  - Code is ready



- Plan to do next :
  - Z vertex reconstruction with INTT
    - Make tracklet by combining 2 hits in inner and outer INTT layer.
    - Tracklet is extrapolated into R= 0, then make histogram of z-position at that point.
  - I will use Joseph's conversion method to convert INTT-ch to 3D position