INTT Weekly Meeting

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sPHENIX

Software updates (coresoftware)

- Mid February 2024 I made a substantial PR
  - Implemented a tool for readout masking `InttMaskedChannelSet`
  - Implemented tools for obtaining surveyed transforms from CDB `InttSurveyMap`
    - Hao-Ren has been using this for the simulation fix
  - Re-implemented some structs used
    - Created a `InttMap` class that will eventually replace the `InttNameSpace`
    - More versatile/modular
    - Renames of struct members for clarity/brevity
    - Iterator-like behavior of structs
- More to come over this next week
  - Added an `InttFeeMap` so our Felix map can be loaded from CDB
    - Better implementation
    - Versatile—easy to maintain multiple versions if at some point it needs to change

InttDeadMap

- Channel masking can be done through the `InttMaskedChannelSet` class mentioned before
  - Uses custom comparators for fast searching (including wildcarding)
  - Structs (`InttMap::Offline_s`) give keyword-argument like syntax to function calls
- Practical equivalent to `InttDeadMap` in g4intt
  - The original `InttDeadMap` class would require substantial overhaul
  - Instances are written into DSTs which make substantial class edits dangerous
    - Cannot load DSTs if the base class is changed too much
    - In particular, member function signatures
  - Comes with an unversioned `InttDeadMapLoader` that does not use formatting conventions we have come to standardize on
    - xml vs CDBTTree
- For these reasons an alternate class was written (`InttMaskedChannelSet`)

Cleanup

- There have been some modules in the intt subdir of the coresoftware repo for some time:
  - `InttRawDataConverter`
  - `InttRawDataDecoder`
  - `InttCombinedRawDataConverter`
- I plan on removing these over the next couple months–they were useful for prototyping
- However we are starting to settle on a more final class (`InttCombinedRawDataDecoder`)
  - This may be changed to have something like "Unpacker" in the name
  - Very close to what the official DST production macro will ultimately use

- The `InttNameSpace` will be replaced by `InttMap` and `InttFeeMap` classes
    - `InttMap::Offline_s` members have `strip_phi` and `strip_z`
    - `InttNameSpace::Offline_s` members have `strip_y` and `strip_x`
    - `InttMap`'s are clearer
- Channel conversions should use a loaded mapping and therefore need to be handled by a class (`InttFeeMap`) instead of the hardcoded `switch` statement `InttNameSpace` uses
    - This is the main driving need for the rewrite
- Will eventually remove
    - `InttMapping`
    - `InttFelixMap`
- but I think these may be used in online monitoring

Relevant files

- https://github.com/sPHENIX-Collaboration/coresoftware/blob/master/offline/packages/intt/InttMaskedChannelSet.h
- https://github.com/sPHENIX-Collaboration/coresoftware/blob/master/offline/packages/intt/InttMap.h
- https://github.com/sPHENIX-Collaboration/coresoftware/blob/master/offline/packages/intt/InttSurveyMap.h