Event Decoding

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ENGINE Decoding

ENGINE decoder uses single map file

Sorts raw data into hit lists for each detector (Wire chamber set, hodoscope set, aerogel, shower counter ...). A hit consists of all the data for a given wire or bar.

```
1, Plane, counter, TDC          # WC hit list.  Plane, counter might be
2, Plane, counter, TDC          # repeated for multiple hits on one wire
...
```

For hodoscopes

```
1, Plane, counter, TDC+, TDC-, ADC+, ADC-
2, Plane, counter, TDC+, TDC-, ADC+, ADC-
...
```

Do we want something similar in a root analyzer?

ThcRawHitList work in progress

New Classes to build on top of Hall A analyzer decoder:

THcDetectorMap – Reads and stores the Hall C style detector map. Probably call the object gHcDetectorMap

THcRawHit – Abstract class that specific detector types will inherit their hits from. Must have at least plane and counter as members. Must have SetData method to save raw data values according to signal number (1-4 for hodoscopes)

THcHodoscopeHit – Inherits from THcRawHit, has members fADC_pos, fADC_neg, fTDC_pos, fTDC_neg

THcRawHitList – A list of raw hits of of some hit type that inherits from THcRawHit. When given the decoded event object and the detector map object, it constructs the raw hit list for its detector.

Very little code actually written

Following THCRawHitList work

Follow instruction in wiki to setup git
(https://hallcweb.jlab.org/wiki/index.php/ROOT_Analyzer/Git)

```
git checkout saw_decoding
```

If local git already setup, do

```
git pull origin
git checkout saw_decoding
```

Code is in src directory

THcRawHitList discussion

Advantages:

Code to build up hit lists not duplicated for each detector

Disadvantages:

Typically, hall A analyzer treats each plane as a separate object. This implies that we treat set of planes as the object. (Like the Fortran Analyzer)

Not so clear how to match up Pos/Neg, ADC/TDC at raw decoding level for multi hit TDCs (and ADCs).