Scalers, EPICS, Helicity, Deadtime, etc...

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Scalers

- Documentation about THaScaler class:
  http://hallaweb.jlab.org/equipment/daq/THaScaler.html

- Documentation about hardware setup :
  http://hallaweb.jlab.org/equipment/daq/dstruct.html

- How to add to output of Podd:
  http://hallaweb.jlab.org/root/doc/output.html

Scaler Data

- **Scaler Data Sources**

  - VME online server

  - CODA Event Stream every $\sim$100 events

  - End-of-run history file

  - halog

- **Existing Scaler Analysis Codes**

  - Standalone code using THaScaler (e.g. xscaler)

  - Podd contains THaScaler objects

  - Other user codes, see
    http://hallaweb.jlab.org/software/tools

EPICS Data

- ## EPICS Data

    - Experiment-specific scripts write data to data-stream

    - Format is "keyword data" where "data" is a number or string

    - Examples: "IPM1H04A.XPOS 1.82"   "slia:DataValid No"

    - Podd contains THaEpics which parses the EPICS data

    - Data are added to the output, see EPICS section in:
      http://hallaweb.jlab.org/root/doc/output.html

Helicity

- Helicity during non-parity running
  - Trivial: look up a bit

- Helicity during Parity (G0, etc)
  - Helicity is delayed by 8 windows (240 msec)
  - THaHelicity: uses time info and prediction algorithm to cross-check helicity.
  - Reliability $\rightarrow$ DAQ takes all, analyze all helicity transitions
  - $\rightarrow$ Take T9 data (30 Hz pulser) and analyze all of them
  - Documentation: http://www.jlab.org/ rom/g0helicity.html

Normalization

Ingredients to get a cross section.

- Livetime for each trigger

- Calibrate beam current and normalize

- Prescale factors

- Example of driver code: /src/THaNormAna

- THaNormAna needs tuning for each experiment (DVCS and e94107 have good versions).

Outstanding Issues

"To do" list and other issues

- Make it easier to add scalers – replace THaScaler::InitData()

- THaOutput to handle variable sized arrays better
  + other suggestions from N. Gevorgyan.

- Gather improvements to THaNormAna   (e.g. e94107 ?)

- Fix an obscure scaler bug   (ROC11 default output ...)

- Test Ole's improvements to THaHelicity (better C++).

- Please report bugs and please contribute to :
  http://hallaweb.jlab.org/software/tools