Hall A/C software sharing/collaboration - March 14, 2012

Histogram Monitoring

Hall A uses the "Online GUI" package to display histograms during operations. This would work well in Hall C too, particularly with a Hall A style analyzer.

Derivations have of this GUI have already been used for several Hall C experiments. (Parity experiments + GeP)

Single Event Display

Two event displays were implemented in the past for the Hall C spectrometers, but were not extensively used. However, the event displays were useful in tracking down early DAQ problems.

An event display, Eve, was implemented for Bigbite in Hall A. This display aided in the debuging of tracking algorithms. The Eve event display is implement in `ROOT` as modules that are loaded into the Hall A analyzer.

Eve will explored as a possible framework for a Hall A/C common event display. In particular, it is a good starting point for an HMS/SHMS event display as the geometry (set of horizontal drift chambers and set of hodoscope planes, perpendicular to the central ray.) is similar.

GEMC for Geant4

GEMC is a Hall B developed framework built on Geant4. It uses a database to store geometry information so that it need not be hard coded in the source code. GEMC is already in use for experiment/detector development in Halls A and C. (SoLID, SHMS Aerogel).

In Halls A & C, if it is determined that a detailed focal plane simulation is need, GEMC would be a considered seriously. The geometry could be constructed by reading the same parameter files that the analysis uses.

Using Hall D database

The Hall A analyzer currently uses a text file-based database with support for key/value pairs (including arrays & strings) and time-dependence of values. Although working well, we are concerned that this system might not scale well for larger experiments, that the database is difficult to maintain and centralize, and that there is no built-in support for parameter history. The Hall D database system, as far as we understand it, would satisfy our requirements and address most if not all concerns. We plan to investigate the possibility of integrating the Hall D system as one of several database backends in the Hall A/C analyzer.