

Hall A Analysis Workshop Summary

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Hall A Collaboration Meeting
December 14, 2007

Outline

- 1 Reports
 - C++ Analysis Software Status (Ole Hansen)
 - E06-007 (Pb(e,e'p)) Analysis Update (Juan Cornejo)
 - EPICS-MySQL Interface (Brandon Craver)
 - Database Applications in Analysis (Alexandre Camsonne)
- 2 Discussion
 - Open Issues
 - Communication, Coordination

http://hallaweb.jlab.org/data_reduc/AnaWork2007b/

C++ Analyzer

- Version 1.4 **stable**. Only minor updates required in 06/07.
- Upcoming **Version 1.5** (ETA March 2008)
 - More user-friendly database format
 - Better performance
- Future support policy: **maintenance mode**
 - Hall A staff continues to support core package (bugfixes, minor updates)
 - Major new features expected to be contributed by users who need them

BigBite Tracking Software

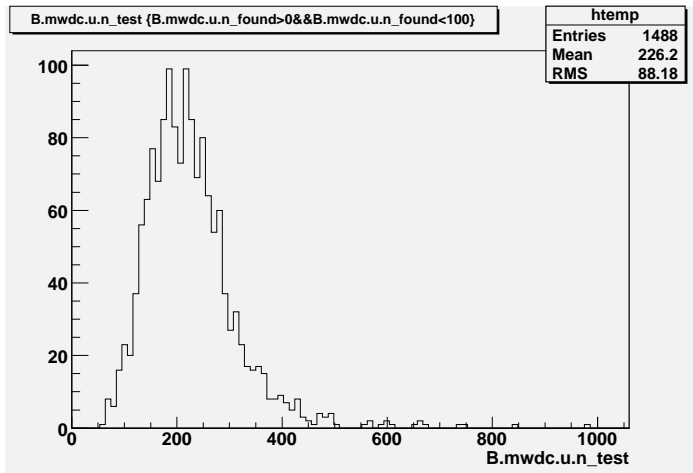
Motivation

Existing code slow, memory-hungry

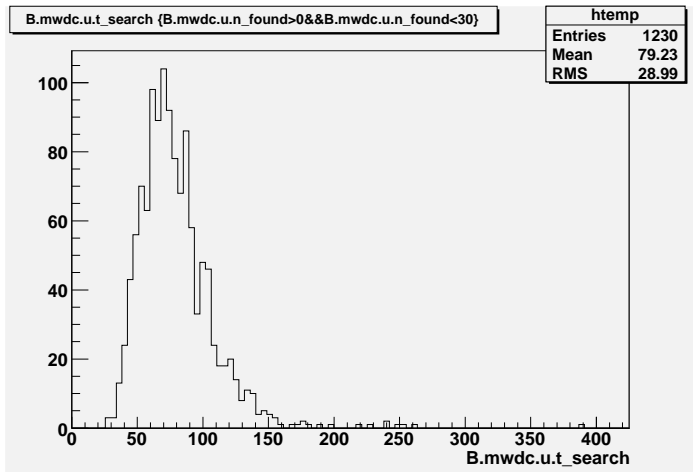
New Code

- Tree Search Algorithm
 - **Recursive template matching** (Dell'orso et al., NIM (1990))
 - Proven at HERMES with chambers similar to BigBite's
 - Fast and efficient (speed and memory)
- **About 50% completed**. ETA March 2008.
- First tests show excellent speed

Pattern Comparisons per Event per Projection



Real Time in TreeSearch per Event (μs)



E06-007 (Pb(e,e'p)) Analysis

- Aiming for **850 keV** missing energy resolution
- Achieved **1 MeV** unless using very strict cuts
- **Raster corrections** main culprit?
 - Large raster size requires **2nd order** *XTRANSPORT* correction
 - Still not fully corrected
 - Raster understood?

EPICS MySQL Database Scripts

- Perl scripts to **create & fill MySQL database** with all EPICS data from sets of runs
- PHP Web interface for **retrieval and visualization**
- **Automate** in Counting House?

<http://hallaweb.jlab.org/experiment/E02-013/DB>

Database/MySQL Applications in Analysis

- MySQL is the preferred database
- Many uses
 - Mapping, calibration, geometry (=Analyzer DB files)
 - Run parameters
 - Slow control
- Many deployments
 - Compton
 - saGDH, HAPPEX, DVCS
 - LEDEX, $^3\text{He}/^4\text{He}$, CSR, ...
- Could be **better coordinated**

How to Address Open Analysis Issues?

- Two main categories
 - Physics/detector analysis (understanding data)
 - Technical software issues (performance, features, bugs)
- Identified **2–3 man years** worth of projects
- **Manpower** is serious limitation
- Suggestions
 - PhD students at early stages of studies
 - CS majors from nearby campuses?
 - More effective use of user expertise

Communication, Coordination

- More effective workshops
- Analysis **bulletin board** (“forum”) on Web
- Improved **analysis resources** Web pages
- Identify and list **contact person** for each experiment’s analysis
- **Analysis Team** (Ole, Bob M., Doug, John A.) will coordinate

Workshop Format

- **Tutorials** on common analysis topics by experts
- Technical presentations from **all** active experiments (short ok)
- Full-day workshop at **every** collaboration meeting

Summary

- Data analysis framework maturing, but still **many ideas for improvement**.
- Need **better organization** and efficiency