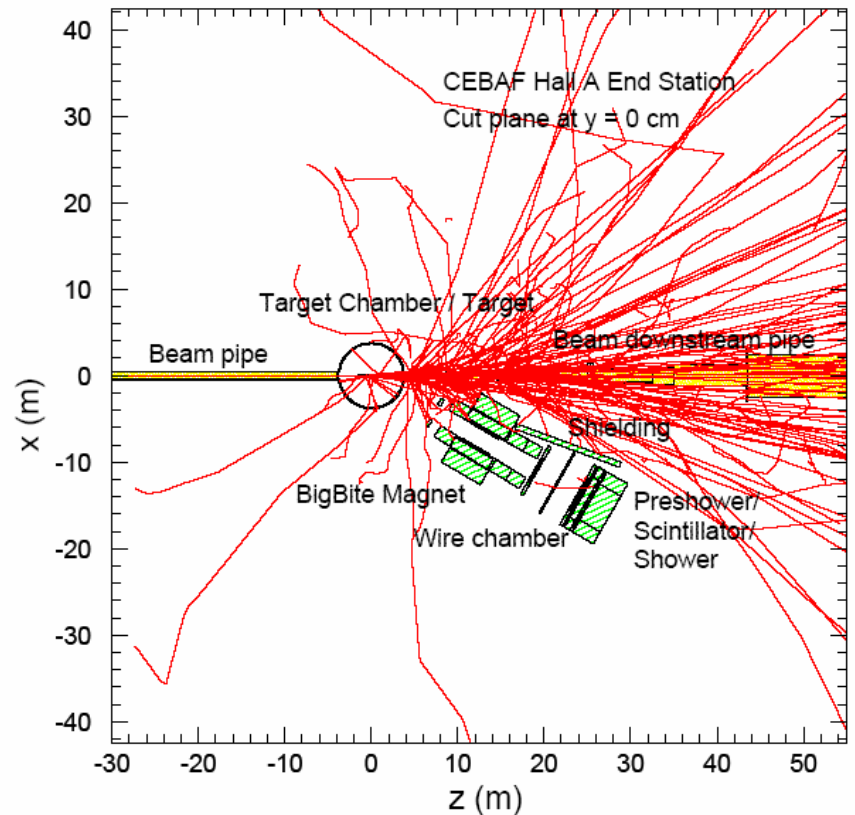


BigBite Wire Chamber Test

Xin Qian
Duke University MEP Group
FOR TRANSVERSITY
COLLABORATION

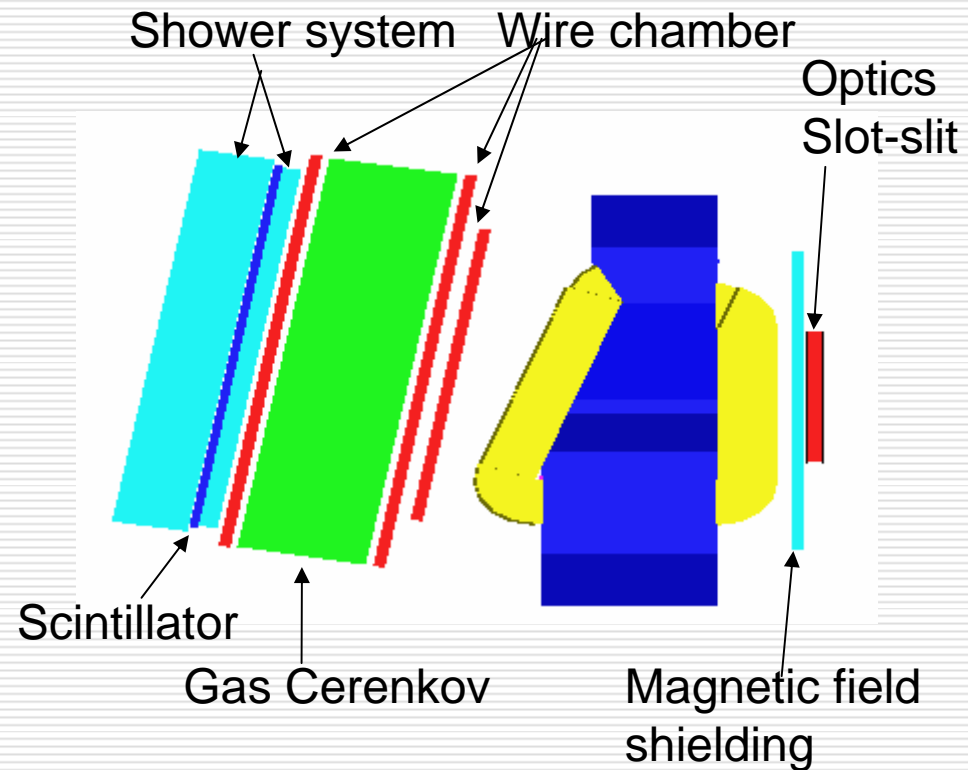


Outline

- BigBite Setup for TRANSVERSITY
 - BigBite Two Chambers Test
 - BigBite Middle Chamber
 - BigBite Tracking/Wire Chamber Software Development
 - Wire chamber software
 - Tracking Monte-Carlo
 - New Tracking Algorithm
-

BigBite Setup for TRASVERSITY

- ❑ Wire chambers have over 3000 channels.
- ❑ Shower + preshower have over 200 channels.
- ❑ Scintillator has 26 channels.

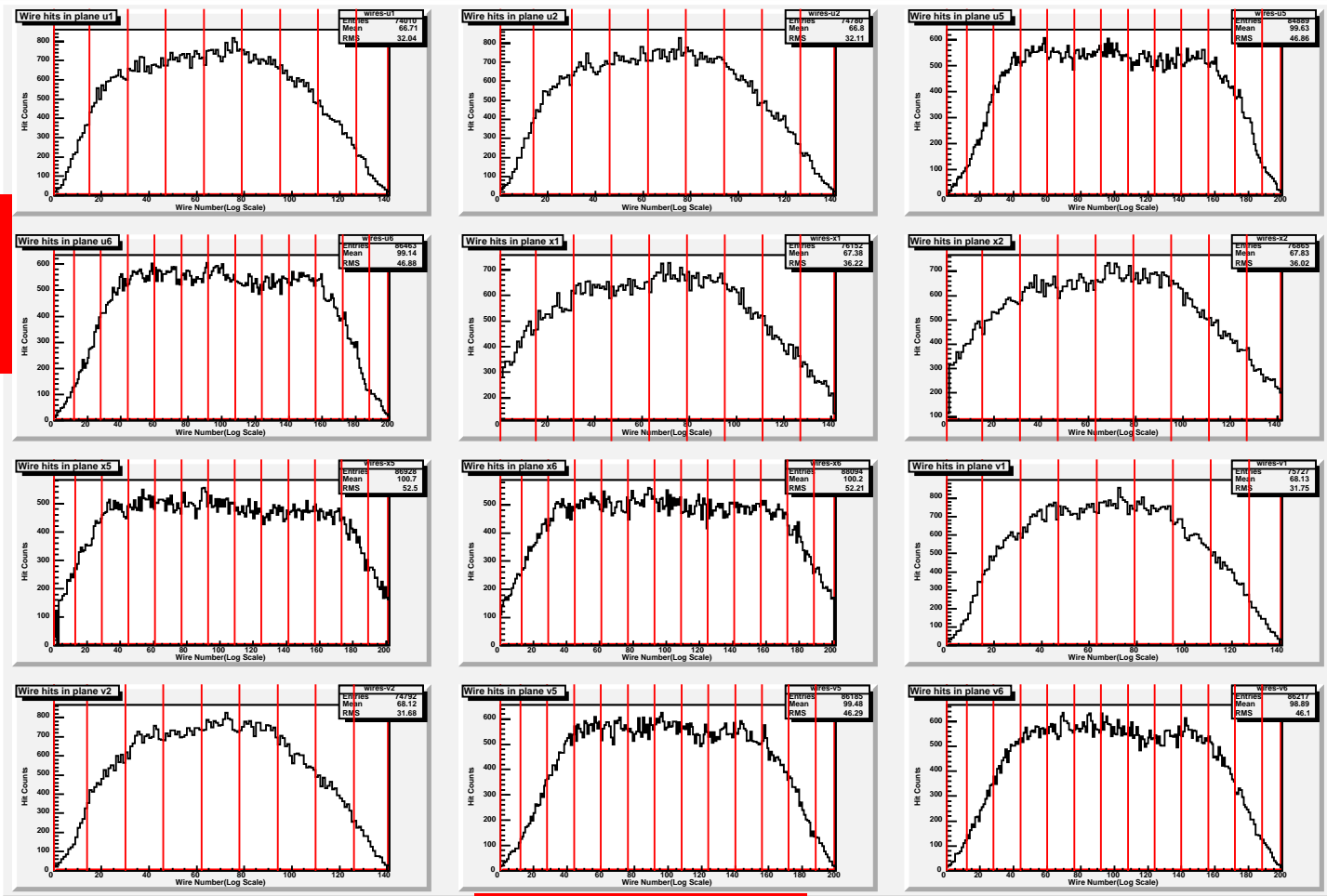


BitBite Two Chamber Cosmic Test

- Trigger: **Front and Back scintillator plane** (BigBite scintillator) coincidence trigger.
 - Over **2000** channels, **132** amplified cards, **160** long 100 feet flat cables, **9** level translators, **12** patch panels, **24** TDCs, **2** ROCs, **11** HV cables, flushing gas all the time when apply HV.
 - **8** low voltage cables, **4** threshold cables for the amplifies cards.
 - Detailed **mapping** for all the channels.
-

BigBite Two Chamber Test

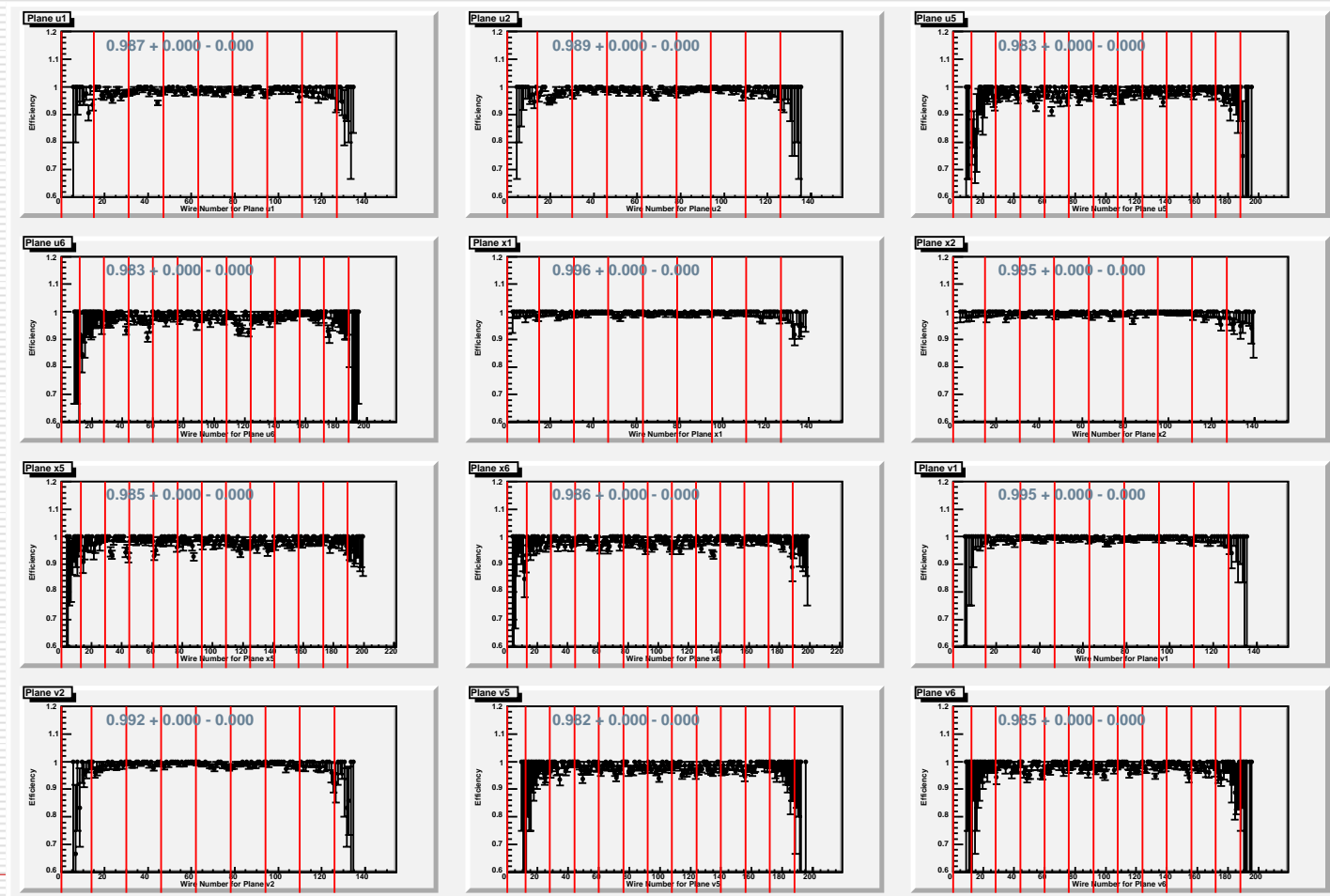
of
hits



Wire Number

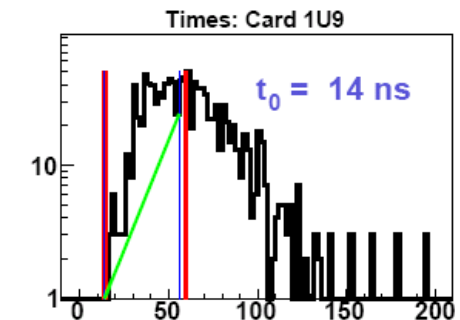
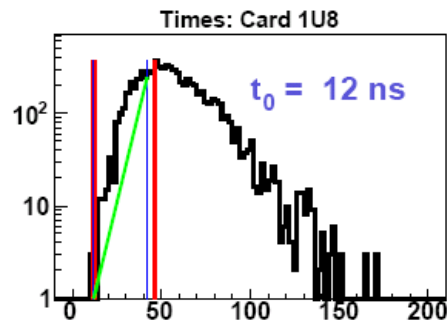
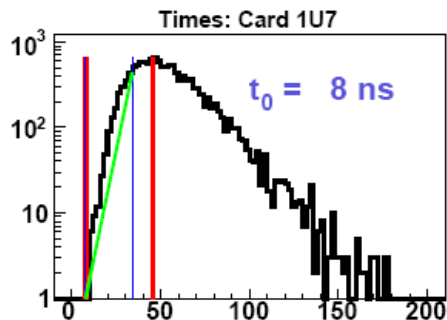
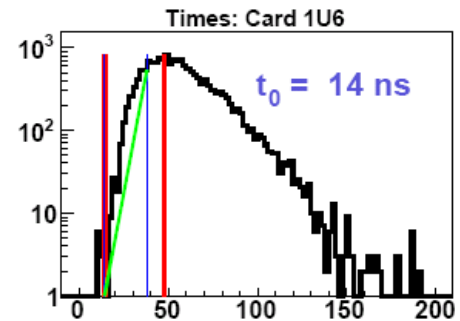
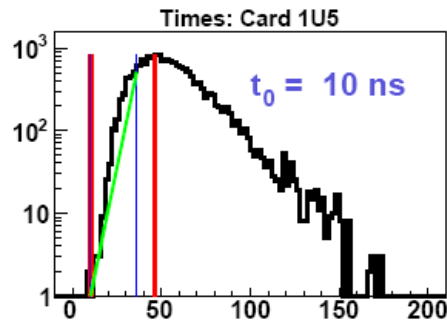
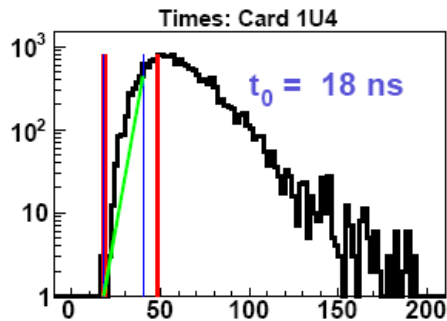
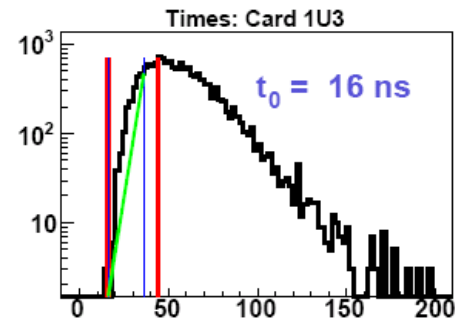
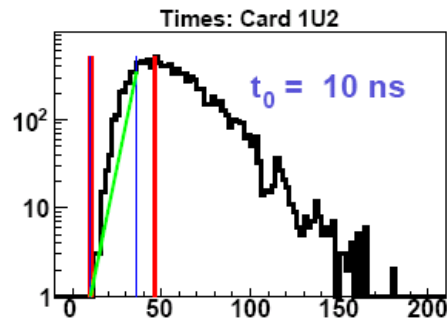
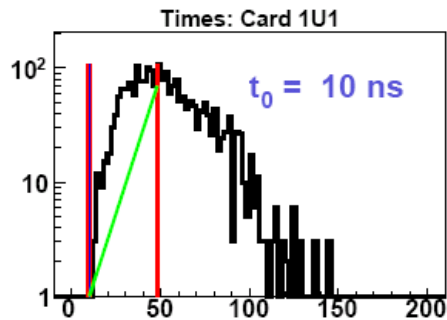
Wire efficiency over 98%

eff.

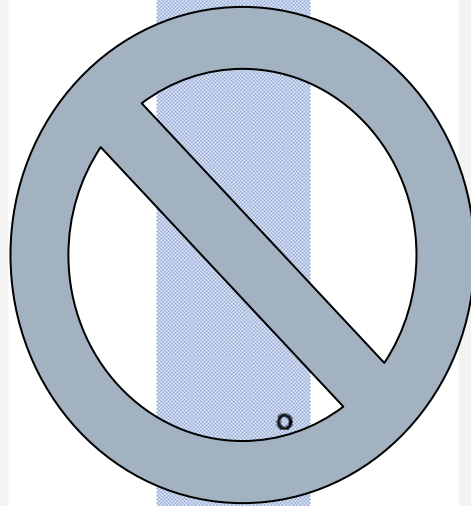
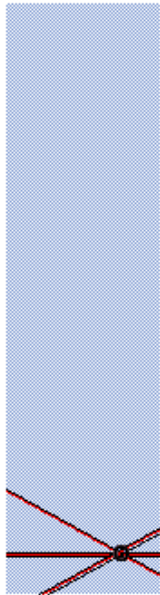


Wire Number

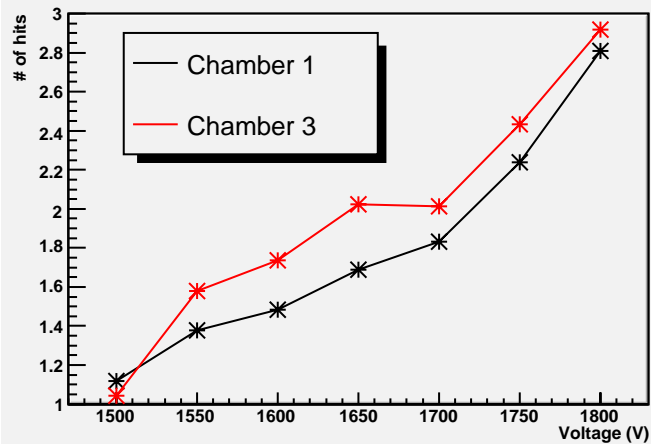
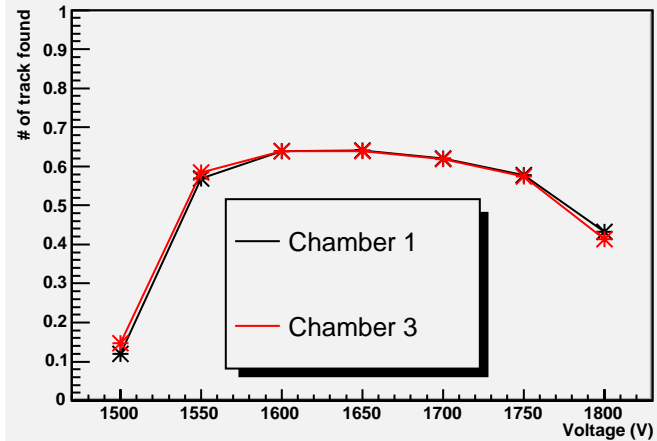
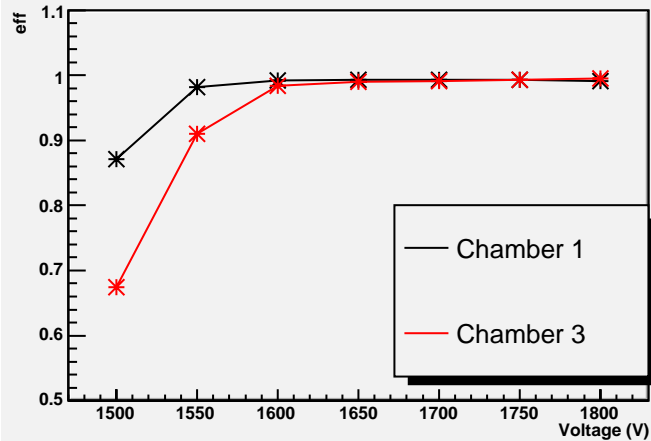
Drift time



Event Display



Preliminary Results For HV Scan



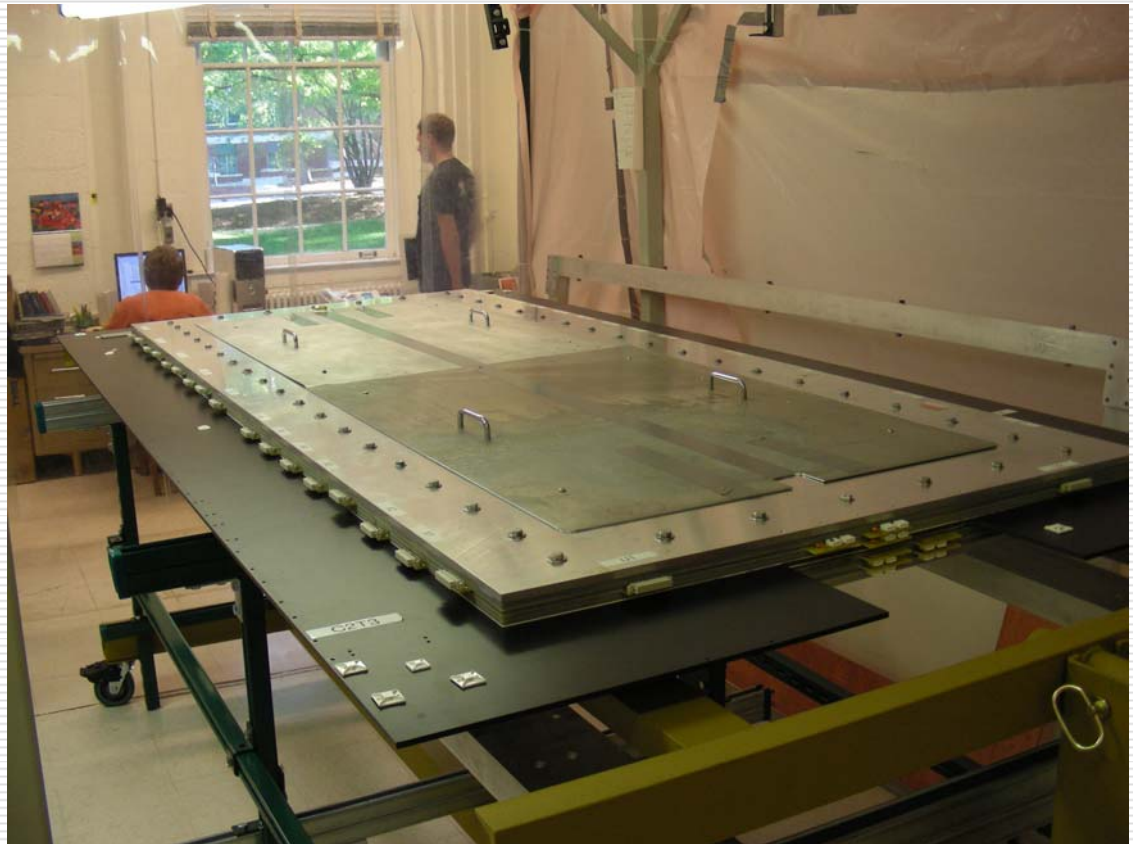
BigBite Middle Chamber

- ❑ Middle Chamber has been put together for test.
- ❑ Several dead wire are identified.
- ❑ Not difficult to fix, should be deliver in July.
- ❑ Thanks to M. Shabestari, B. Craver, N. Liyanage, R. Lindgren, B. Sawatzky, J. Segal, V. Nelyubin and others in UVA group.



BigBite Middle Chamber

- Will meet the milestone.
- Preparation work at JLAB is in progress.
- ~80 100 feet Long flat cables, ~80 amplified cards, ~80 low voltage connectors, ~6 level translators, ~250 short flat cables for FASTBUS readout, HV cable, gas line etc.

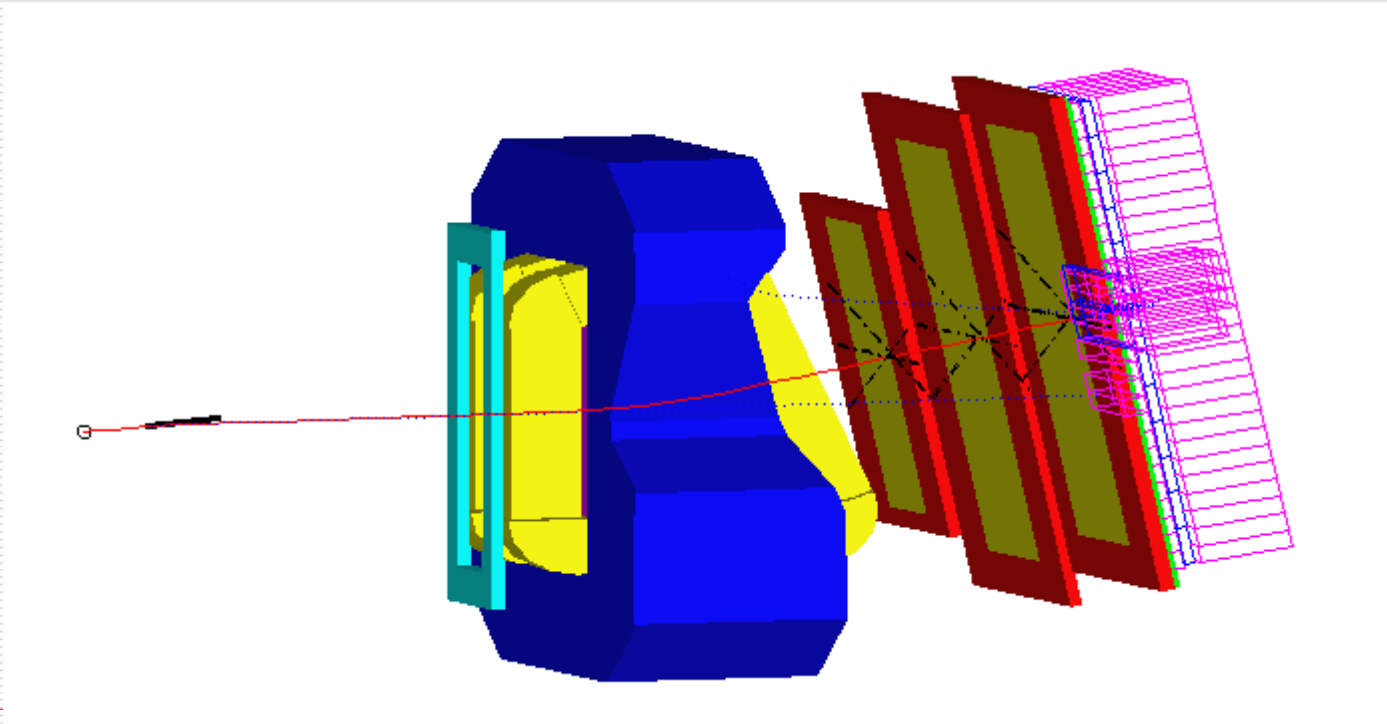


BigBite Wire Chamber Software

- Done
 - Software to get # of hits
 - Software to get drift time and t_0
 - Software to get efficiency
 - Event display
 - HV control software
 - GEN tracking software works fine.
 - To do:
 - Finish tracking MC.
 - New Tracking Algorithm.
 - Other software for online monitor.
-

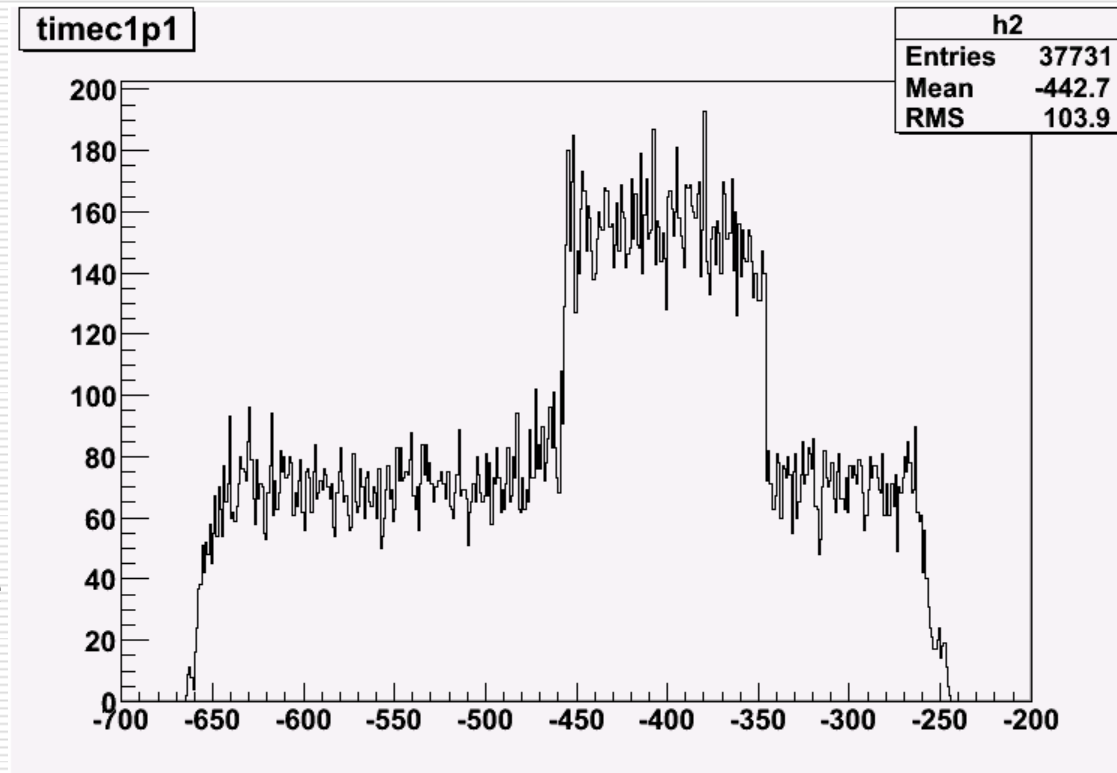
Tracking MC I

- Event generator is based COMGEANT (E. Chudakov) GEANT3 Monte-Carlo.



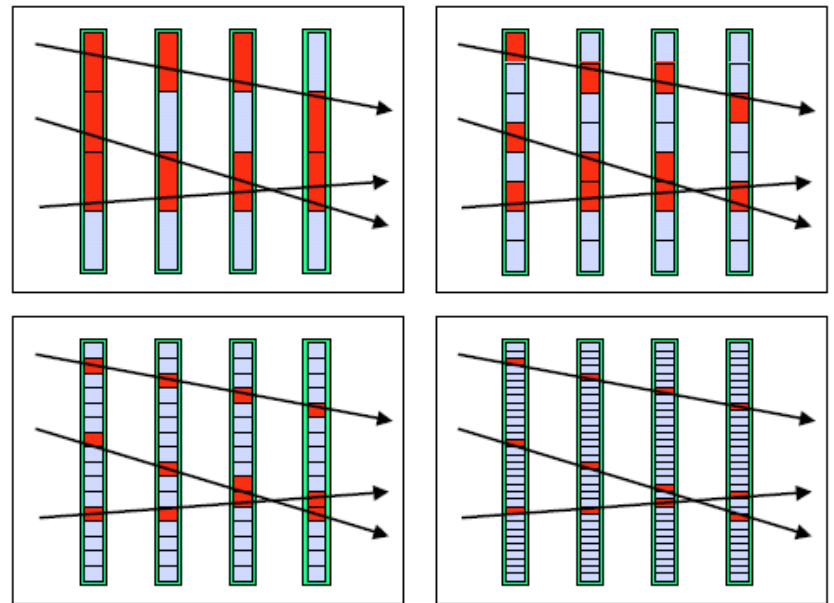
Tracking MC II

- Drift Time
- Digitization for wire chamber/shower blocks, scintillator.
- Need to write the interface to analyzer



New Tracking Algorithm (From O. Hansen)

- Tree searching and pattern reorganization method
 - Generate pattern table from MC
 - Do tree search for track.



Other software for online monitor

- ❑ Thanks for S. Riordan, B. Craver and others of GEN collaboration.
 - ❑ GEN wire chamber analysis script package with GEN tracking software
 - ❑ Ready to use or straight forward to modify for TRANSVERSITY.
-

Summary

- ❑ Chamber 1 + Chamber 3 are ready to go.
 - ❑ Chamber 2 is expected to be delivered on time.
 - ❑ Still have lots of preparation work for chamber 2.
 - ❑ Basic software for wire chamber are ready for experiment running.
 - ❑ New tracking MC/Algorithm are being developed.
-

Acknowledgement

- X. Jiang
 - K. Allada, C. Dutta, H. Yao
 - Others mentioned during this talk
-