

# Software Overview

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# Rapid progress on the reconstruction software

(color code: *relatively mature*, *active development*, *in the future*)

## TPC Tracking:

- Tracking finding (Paley)
- Track helix fit (Paley)
- Vertex finding (Paley)
- Geometry (Barnes)
- ExB corrections (Paley,Soltz,Heffner)

## Chamber Tracking:

- BC tracking finding and fitting (Seun)
- “Prototype” TPC + chamber tracking and vertexing (Messier,Paley)
- Standardization of chamber geometry and reconstruction (Lebedev)
- Track segment finding in DC 1, 2, 3 (Lebedev)
- Track segment finding in Chambers 4,5,6 (Ratnikov)
- Survey numbers (Raja)

# *Calibration*

- Bad channel maps (many...)
- Trigger detector timing (Lebedev)
- DC timing (Lebedev)
- TPC drift velocity and timing offset (Paley)
- TPC gains (Klay/Miller/Heffner)
- TOF timing (Rosenfeld/Hendrickson/Wilson)

# *Particle ID*

- Beam tagging w/ CKOV's (Lebedev)
- Cluster shape fitting (Miller)
- $dE/dx$  calculation (Klay,Heffner)
- CKOV (Lange/Graf)
- TOF (Rosenfeld/Hendrickson/Wilson)
- RICH ring finding/fitting (Messier)
- Ring/Track matching (Seun)

# Production

- Made first attempt at processing all of our data using both Livermoore and Fermilab batch farms
- Processing done in 3 passes:
  - Pass 1: Raw to ROOT data reformat  
Bad channel identification  
Pedestal calibration  
Trigger timing calibration
  - Pass 2: Time walk calibrations  
Beam track reconstruction  
TPC track reconstruction  
Drift velocity calibration
  - Pass 3: Final reconstruction and DST
- Roughly completed through pass 2
- Results available (see next slide)
- ***Big “hats off” for Andre and Jen for seeing this through!***
- Make a second attempt in ~September

## Available data

- Several data sets available on AFS (eventually will use dcache...)
- Data files (tried to get 2 files for each target/momentum setting):

### **/afs/fnal.gov/files/data/e907/d6:**

Al-30GeV.12198.0.root	Bi+30GeV.14053.0.root	LH2+17GeV.13813.0.root
Al-30GeV.12201.0.root	Bi+30GeV.14054.0.root	LH2+17GeV.13814.0.root
Al+30GeV.12712.0.root	Bi-30GeV.14079.0.root	LH2-17GeV.13879.0.root
Al+30GeV.12720.0.root	Bi-30GeV.14080.0.root	LH2-17GeV.13881.0.root
Al-50GeV.12674.0.root	Bi+50GeV.14253.0.root	LH2+50GeV.13285.0.root
Al-50GeV.12675.0.root	Bi-50GeV.14368.0.root	LH2+50GeV.13289.0.root
Be+30GeV.12718.0.root	Bi-50GeV.14373.0.root	LH2-50GeV.13394.0.root
Be+30GeV.12719.0.root	C+17GeV.14045.0.root	LH2-50GeV.13395.0.root
Be+50GeV.14094.0.root	C+17GeV.14046.0.root	LH2+72GeV.13600.0.root
Be+50GeV.14103.0.root	C+50GeV.14281.0.root	LH2+72GeV.13601.0.root
Be-50GeV.14352.0.root	C+50GeV.14288.0.root	LH2-72GeV.13702.0.root
Be-50GeV.14363.0.root	files	LH2-72GeV.13706.0.root

*If possible, use these files for testing/debugging as it will be easier for us to help as we won't have to go routing around to find the exact file you're using*

- Output histograms/ntuples from production pass 1

### **/afs/fnal.gov/files/data/e907/d2**

- DST ntuple files: /afs/where/are/these....
- Useful data sets ID'ed during workshop: (beam events, electron samples,...)  
Need to make and post these in coming days.

# *Software workshop*

- Slides posted here:  
<http://enrico1.physics.indiana.edu/mipp/meetings/2005-07-19/>  
(See especially the to-do list in introductory talk)
- General feeling was that it was productive and should be repeated
- Straw-man dates and locations
  - October 6,7,8 (Indiana/Fermilab)
  - December 8,9,10 (LLNL/Fermilab)
- *Thanks every one for their participation!*
- *Thanks to R. Raja and Holger for hosting!*

## *Final Appeal*

- There is much to do and many active projects: *Please be patient!*
- Please stay in touch: e-mail me if you're interested in a certain project and attend weekly meetings on Thursdays
- *Important project receiving little attention: Monte Carlo*