



# MicroBooNE Analysis Tools Update

Text

Eric/Herb  
8 Aug, 2013

# Outline

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- Analysis Tools org Chart
- MCCII samples
- LArSoft infrastructure changes upcoming
- Summer student Neutrino Analysis/LArSoft “course”
  
- Subsequent speakers will delineate the real activity in the group, except ...
  - Offline dB (Andrzej, JsJ, Dave S)
    - which work I represent here with 1 slide

# Analysis Tools Org chart



The team and all interested workers meet  
Thursdays, 9:30am, D0gHouse, 85LARSW

- presented at May Collab Mtg (docdb2514)
  - including job descriptions
- finalized by June Collab Mtg (docdb2636)

**Analysis Tools**  
E. Church, H. Greenlee



**Reconstructi  
on**  
W. Ketchum,  
T. Yang

**Simulation**  
M. Toups,  
B. Seligman

PMT, TPC response  
and readout, generators

**MC  
Management**  
B. Carls

**Data  
Management**  
J. Asaadi,  
Z. Pavlovic

BeamData merge,  
binary swizzling,  
data recon ...

MCCII,III, ...

**Database  
Tools**  
J. St. John,  
A. Szalc

**Software  
Tools**  
S. Gollapinni,  
H. Greenlee

SAM, grid ...

schema,  
storing/retrieving  
calibrations, etc ...

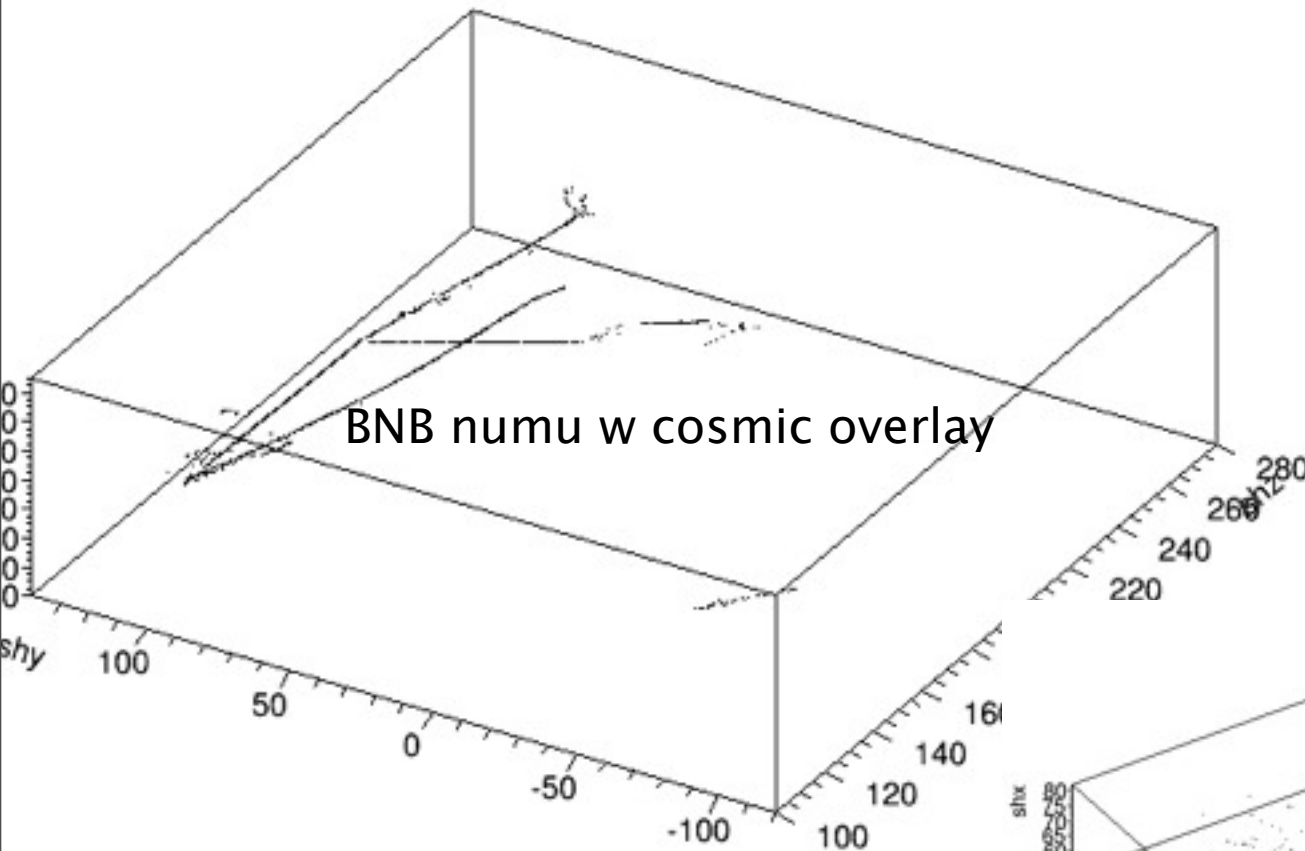
You will hear  
from some of  
these people  
shortly!

**Event  
Display**  
T. Miceli,  
N. Tagg

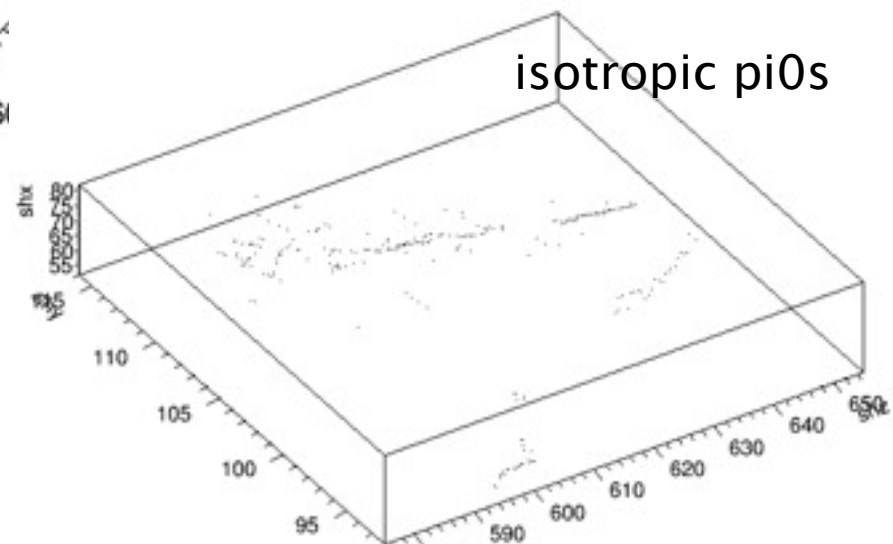
# MCCII (stay tuned for Ben C!)



Spacepoint vectors



BNB numu w cosmic overlay



isotropic pi0s

`/uboone/data/uboonepro/reco*`  
Knock yourself out!

# LArSoft Changes upcoming

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- We announced at a Friday status meeting about 3 weeks ago that there are some structural changes upcoming.
- After much polling of the MicroBooNE Analysis Tools Group, LBNE recon/sim coders, and of the LArSoft “Stakeholders,” SCD, led by Rick Sneider, has put forth and gained approval for a proposed set of changes to the tools used in LArSoft.

# LArSoft Changes 2

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- ❑ The original goal was for stable releases, which are immune to the tumult caused sometimes by check-ins from other experiments.
- ❑ Build rules must build a non-skewed (Consistent) set of libraries wrt all corners of the codebase.
- ❑ Unit/Regression tests needed to ensure consistency of new releases...
- ❑ Plan has gone beyond mere proposal, but is still in some development.

# LArSoft 3



- Our repository will go from svn to git.
  - Many  $O(\sim 9)$  git repositories, in fact.
  - Experiment-specific repository concept will survive.
    - We'll probably take ours to git too. "Trivial."
  - Each repository gets its own ups lib(s), I think...
  - LArSoft svn will remain in its monolithic entirety for, e.g., ArgoNeut
- The build system will go from SRT to a combo of cmake/mrb.
- One will pull down one/many full repositories, as is the git way, and build everything in one's area -- perhaps on a dedicated build machine.
- Librarians, TBA, will dictate what goes from development into release candidate branches.

- ❑ Details, and the unfolding story can be followed at [https://cdcvs.fnal.gov/redmine/projects/larsoftsvn/wiki/Lynn's\\_work\\_page](https://cdcvs.fnal.gov/redmine/projects/larsoftsvn/wiki/Lynn's_work_page) and increasing communications from SCD.
- ❑ There is a detailed plan for a transition, and only after much testing, a cutover.
- ❑ The Analysis Tools folks (I claim) have bought-in and are enthusiastic. We have some git/cmake expertise in the DAQ group, and salty veterans and savvy coders to help with the transition.



- This is always about where Ben Jones starts giving me the “TMI... let’s wrap it up, Eric” gesture.
- Stay tuned...

# Summer Student Work



- “Adopt a topology” is the current meme
- All studies will stem from just one file (of all the many files we generate) MC challenge, in this scheme
  - BNB flux + Genie evts
- One could imagine writing filters to pick out the desired topologies at the MCTruth level. A good LArSoft intro.
- We propose (if it’s our place to do so) Flavio’s studies as a potential summer exercise for small groups of students with a LArSoft “savvy” mentor

From May Collaboration Meeting

# Neutrino Analysis / LArSoft Class

Course just completed.

- We gathered about 1.3 times per week Mondays and Fridays from 10–noon, or part thereof: about 10–12 meetings.
- We set people up on their machines: uboonegpvm, lariatgpvm, argoneutgpvm, lbnegpvm.
- Walked through unix commands. Toured the LArSoft repository. Ran fcl scripts to create muons, reconstruct them. Checked out code, edited, compiled. Perused ROOT. Debugged in gdb, even.
- Walked through HitFinders, ClusterFinders, SpacePointFinders, diving at excruciating detail: for loops! Answered questions related to particular studies.
- Flavio gave an overview of neutrino physics. Ornella discussed neutrinos as they appear in real detectors.

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# Offline dB -- Andrzej, Jason, Dave S.

## Calibrations DB

docdb-2696

- This is the Database that will store the calibrations/parameters etc... needed by the reconstruction. It might get hit by  $\sim O(100)$  jobs that might need a configuration value per each wire ( $\sim O(10k)$  numbers)
- SCD has a system where they set up a web server that shields the postgres server, that cannot take that load. Use http queries, instead of SQL ones. This is based on the MINERVA system developed by Dave S.
- We now have the HTTP server setup and the underlying DB, thanks to I. Mandrichenko and S. Lebedeva. See it here in all it's glory:  
[http://dbdata0.fnal.gov:8086/uboonecon\\_dev/app/data?f=pedestals&t=12347578.00](http://dbdata0.fnal.gov:8086/uboonecon_dev/app/data?f=pedestals&t=12347578.00)
- We have python scripts to create and fill folders both from Igor and Dave S. and the C library to read from the web server. We are designing the way to implement it in LArSOFT.
- Once that is done, the Interested parties can decide and request. What gets stored in the DB.
- See DocDB #2696-v1 for some more details.

