LAriAT
Liquid Ar In A Testbeam

Jason St. John for the T-1034 Collaboration
All Experimenters’ Meeting
2015.04.06
Quick intro to LArIAT

Receives MCenter beam: 8-80 GeV $\pi^\pm$
Quick intro to LArIAT
Quick intro to LArIAT

- Target
- Collimator
- US TOF
- Upstream Wire Chambers
- Dipole Bending Magnets
- Collimator
- Downstream Wire Chambers
- DS TOF
- Halo Scint
- Punchthru Paddles
- TPC
Beamline Instruments installed and commissioned
Tertiary beam, DAQ/Trigger commissioning nearly complete

Work in Progress:
- Reconstruction software

Delta t between DSTOF and USTOF V1751 hits
Run: 4295; Total number of spills: 100

Preliminary
- $A_1 = 1253.70$ entries/ns
- $\bar{x}_1 = 27.38$ ns
- $\sigma_1 = 1.00$ ns
- $A_1 \sigma_1 = 1250.26$ entries
- $A_2 = 128.67$ entries/ns
- $\bar{x}_2 = 41.58$ ns
- $\sigma_2 = 5.33$ ns
- $A_2 \sigma_2 = 686.27$ entries
- $A_1 \sigma_1 / A_2 \sigma_2 = 1.82$
Cryostat and TPC

TPC sense wire readout installed & commissioned.

Cryostat plumbing being completed now.
More from LArIAT soon!
Scientific Goals for LArIAT

Single tracks + 3D imaging
\[ \Rightarrow \text{dE/dx vs. residual range} \]

Experimental determination of proton ID, p/K separation, K/\pi/\mu separation for LArTPCs
Scientific Goals for LArIAT

Separation efficiency and sample purity for EM shower initiators in LAr TPCs

e⁻/γ separation critical to MicroBooNE resolving MiniBooNE low-E excess