

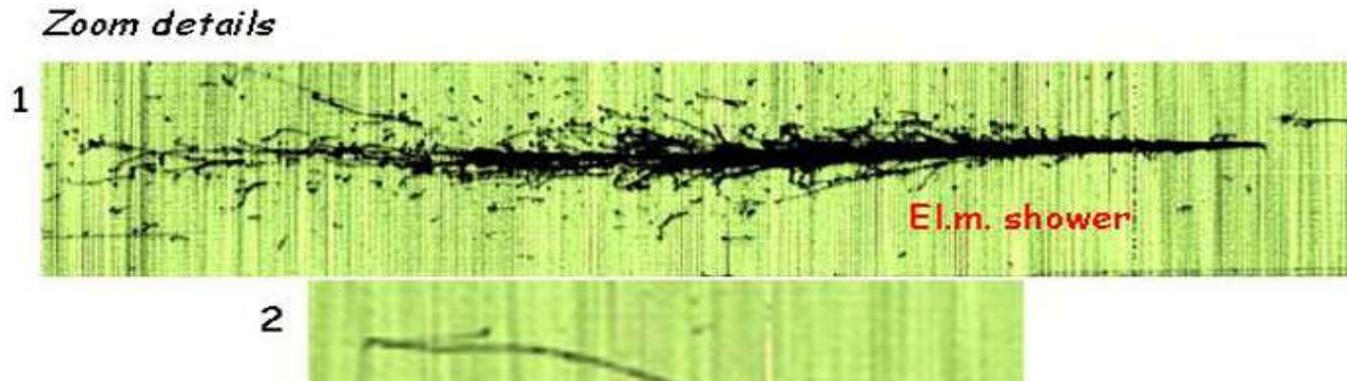
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April 19th, 2005
mini-FLARE review

LArTPC prototyping efforts at Yale

University based effort on R&D for this technology

- Our interest
- Building a small prototype
- Monte Carlo work

Our Interests:



Seems to be a great technology (bubble chamber
precision!)

good for many neutrino physics applications:

oscillation physics – neutrino scattering physics –
exotic neutrino interactions

Near term goals:

Hardware: get technology to work

Our strategy is to get things to work asap, and then go back and try new things.

Building simple vessel and borrowing things where convenient/possible etc.

Software: monte carlo work

adapted GEANT3 MC from Icarus groups. Starting to look at and compare to GEANT4 MC from T2K groups

Farther term goals

How good are these detectors for low energy (~ 1 GeV) neutrino interactions?

How low in energy can these detectors go in tagging electrons (identifying neutrino-electron elastic scatters)

- Understand different particle signatures in detector
- Understanding detector response at very low energies
- How can the combination of light and charge help with particle ID?
- Is neutron tagging possible?

Hardware work:



Bartoszek Engineering



Timeline:
Vessel delivery in
~2.5 months

Measure purities
and see light by
late summer

See tracks in the fall

Bartoszek Engineering

Conclusions:

Very interesting technology for which there is little expertise in US.

Europeans appear to have solved many issues but over many years

our approach: first see that we can build a small prototype as they have done. Then push technology farther to answer specific questions related to specific project (purity, low energy threshold...)

work with other groups (ie: FNAL) to share knowledge