

## **Recent Schlieren Results**

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Issue: Convection vs forced flow in LH<sub>2</sub> absorber

We are considering convective flow of water in response to an electron beam as a model for LH<sub>2</sub>

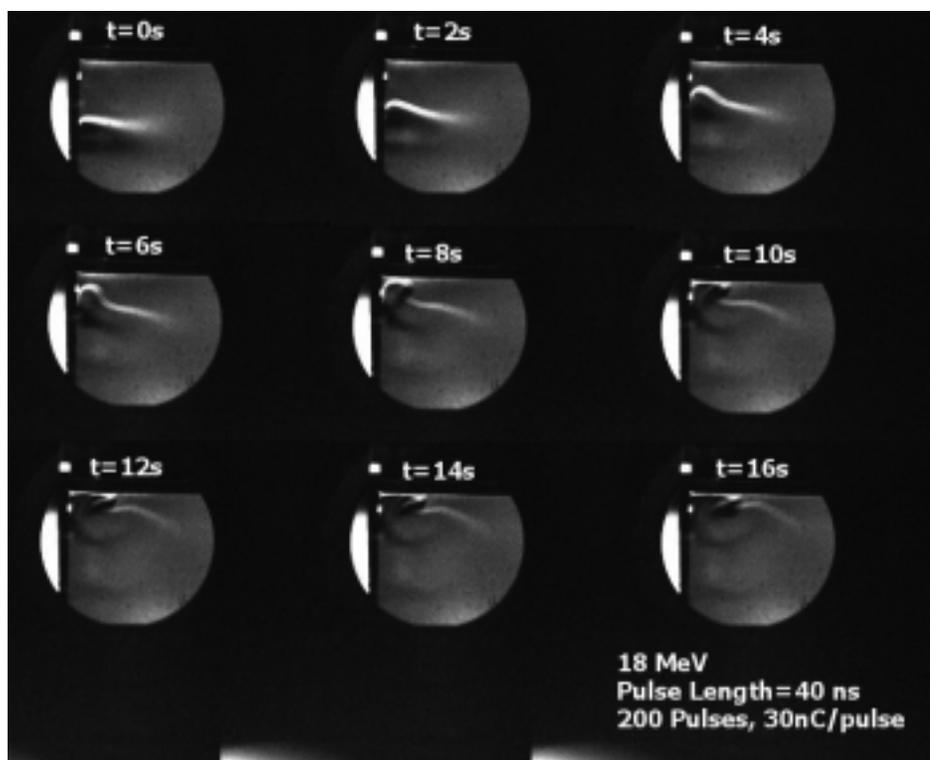
- Last talk: Sensitivity of schlieren test shown
- Today: Presentation of preliminary data with linac beam

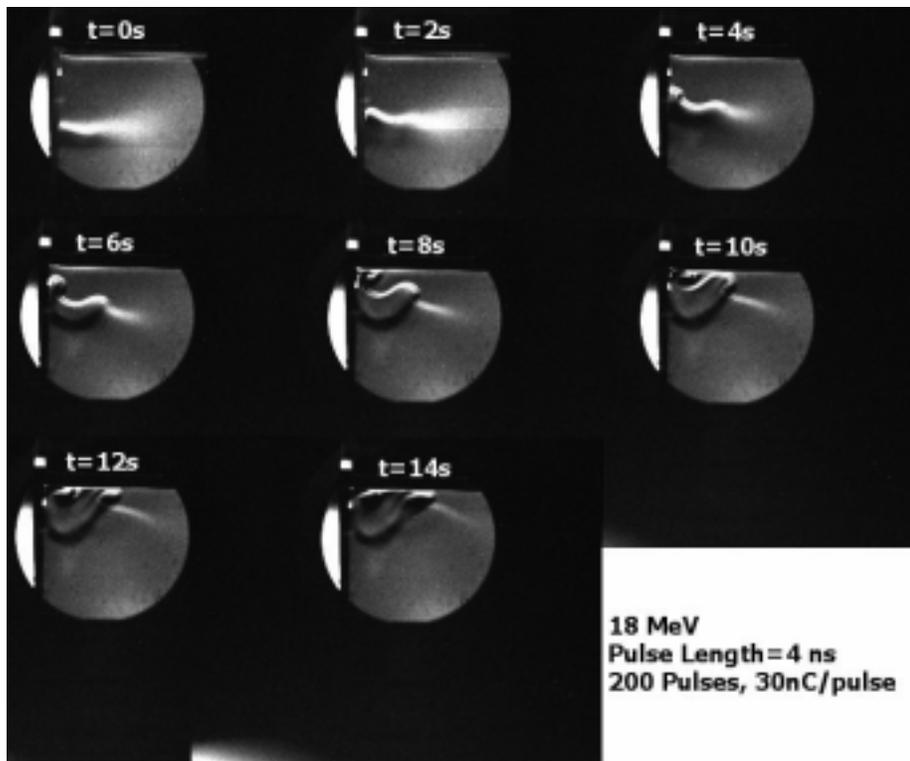
## Two Situations:

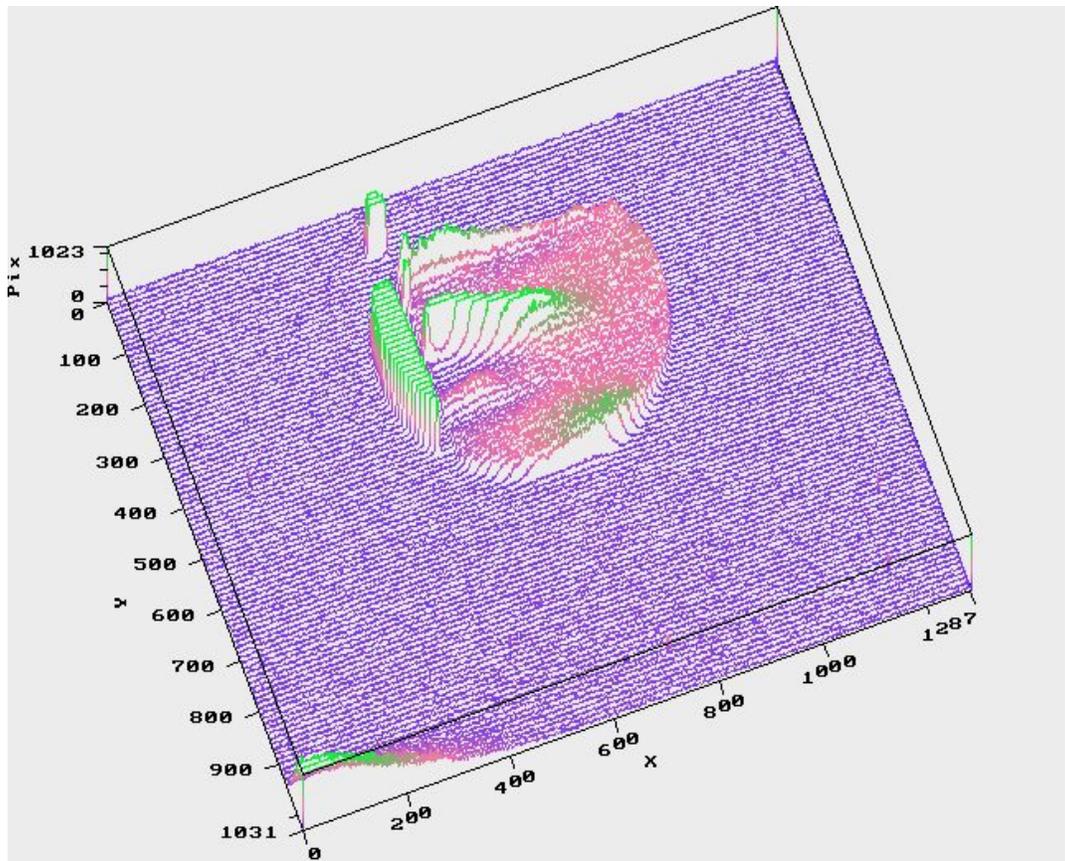
- Both with 18 MeV beam, 200 pulses, 30 nC/pulse
- Range of electrons is approximately 9 cm in water
- Chamber is 10 cm long
- One has 40 ns pulses and the other has 4 ns pulses.

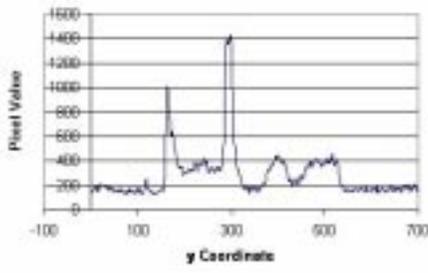
## Will Show:

- Pictures of Turbulence
- Spatial Variation
- Time Development

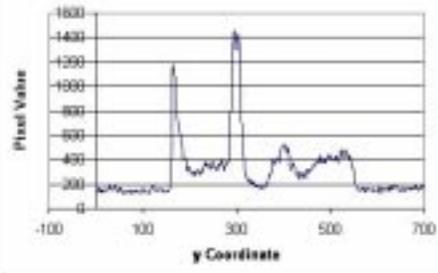




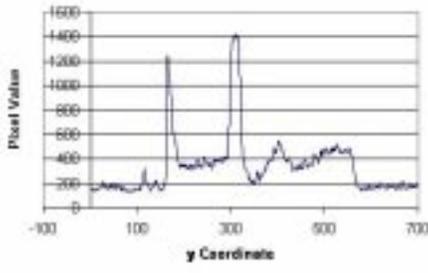




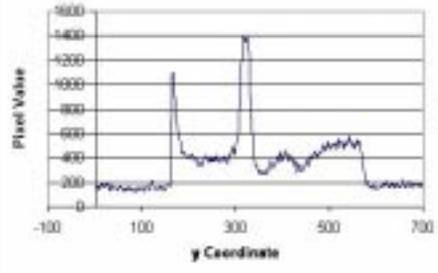
— 620



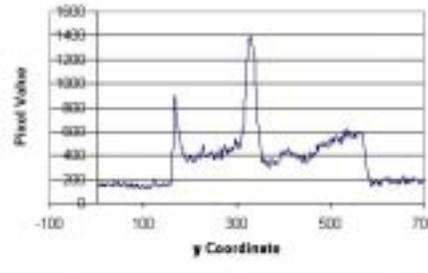
— 650



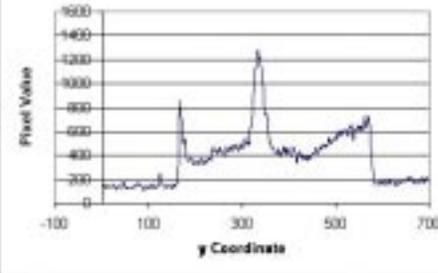
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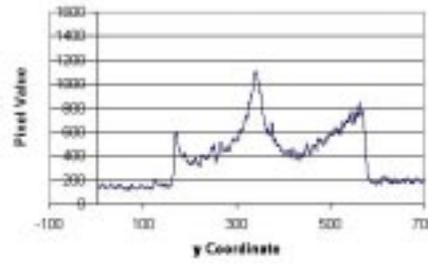
— 710



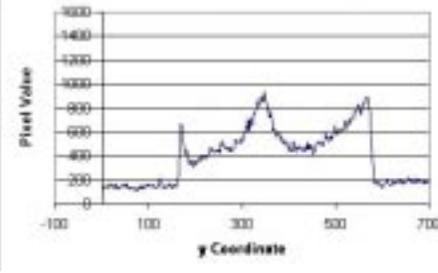
— 640



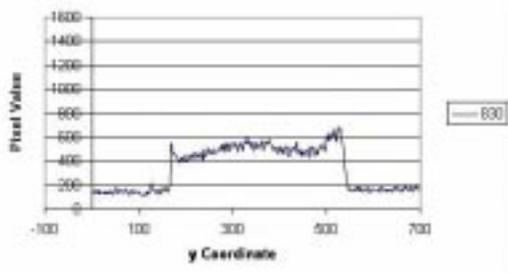
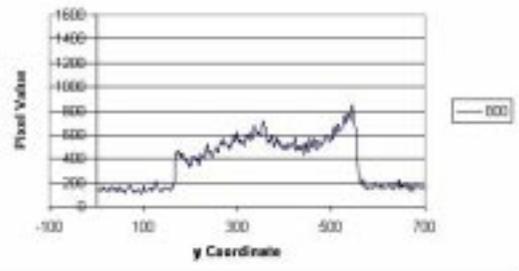
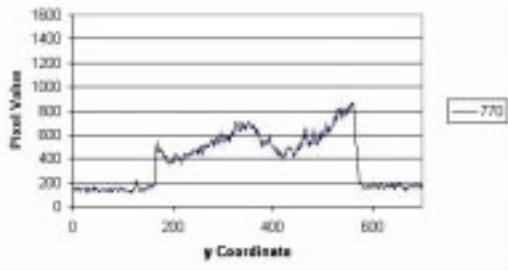
— 670

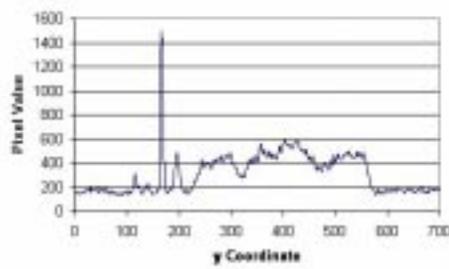
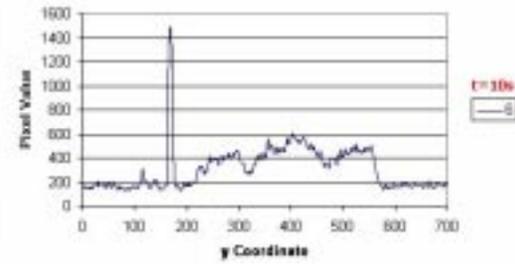
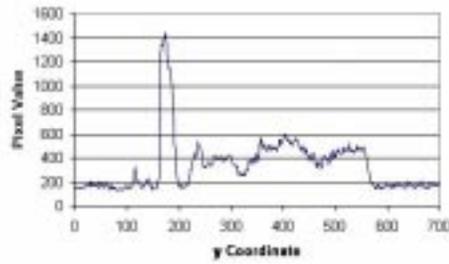
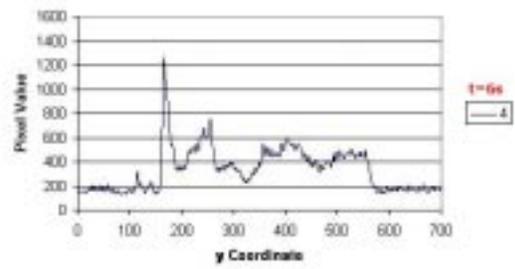
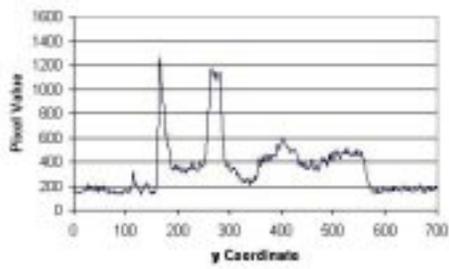
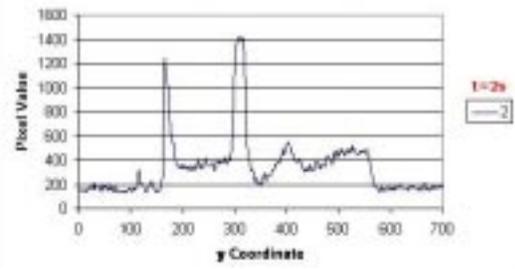
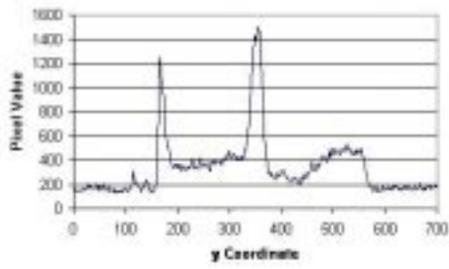


— 700



— 730





## Improvements to Beamline Setup

- Need more mechanical tuning knobs
- Increase electron beam size to match calculations
- Fiducials on tank for precision measurements
- Brighter light for more sensitivity
- Use of quartz to avoid browning of glass
- Understand software and camera better
  - Find appropriate settings on software for better images
  - Use of digital zoom on camera
  - Other options for camera
- Trigger on electron beam

## Matching Experiment with Model

- Comparison of data with computer models  
Will involve changes in geometry to match models
- Friction effects can be experimentally measured
- Startup/steady state issues can be studied