Minutes of the bi-weekly Hall A G_E^n meeting
July 30, 2003

Present: Brandon Craver, Nadia Fomin, Tim Holmstrom, Aiden Kelleher, Dick Madey, Kathy McCormick, Igor Rachek, Andrei Semenov, Alexandre Shabetai, Albert Shahinyan, Jaideep Singh, Bogdan Wojtsekhowski

The main topics of discussion were:

- Drift chamber project at UVA
- Target cell rupture test at William and Mary
- Proposal of new configuration of the N-arm
- Results on the wire chamber rate behind BigBite
- MC simulation of N-arm efficiency
- ^{3}He(e,e′n) counting rate vs position of N-arm
- MC simulation of the time resolution
- Requirement for TOF resolution for quasi-elastic events
- Proposal of configuration of the veto plane

1. Drift Chambers at UVA (Brandon)

   - Preliminary test results for production of cathode planes are promising. Variations of the planarity of the planes are expected to be less than 100 μm, mostly due to imperfections in the printed circuit board (PCB).
   - The height of the glue should be controlled to a level negligible in comparison with the imperfections in the PCB.
   - Production of the cathode planes will begin when the $\frac{1}{2}$ mil copper plated Mylar is received.
   - Check out

     `http://hallaweb.jlab.org/experiment/E02-013/expdocs.html`

     and follow the link for "Status of the UVA Drift Chamber Project" for a copy of Brandon's presentation at the meeting.

2. Target Rupture Tests (Aiden)

   The target rupture tests at W&M are progressing (the object is to minimize the amount of material along the beam while still protecting the beamline vacuum windows):

   (a) The first try at separating an exploding target cell from the beamline windows just filled the space with air. The protection window and the beamline window were both destroyed.

   (b) The second iteration separated the target cell from the beamline window with a helium filled tube. This didn't protect the beamline window because of a shotgun like effect.

   (c) The latest iteration separates the the target cell from the beamline window with an "expansion chamber", where the entrance diameter close to the target is $\frac{1}{2}$ inch in diameter, then the tube expands to 4 inches in diameter. This seems to work very well. This designed will be explored further.

3. New Configuration of the Neutron Arm (Igor and Bogdan)

   A new configuration for the neutron detector was discussed, utilizing 7 layers instead of 5. This configuration would have the $5 \times 15 \times 180$ cm bars forming the first four layers, then the $10 \times 10 \times 160$ cm bars forming the last three layers. An additional section on the bottom would form six layers utilizing the $10 \times 20 \times 180$ cm bars. This would increase the height of the neutron detector, allowing us to move the detector to larger distances, which decreases the rate and relaxes the requirements on the time resolution.

   Check out

   `http://hallaweb.jlab.org/experiment/E02-013/expdocs.html`

   and follow the link for "Proposed Neutron Detector Reconfiguration" for a picture of the proposed setup.

4. MC Simulation of N-ARM Efficiency (Andrei)

   Irina made a simulation of the NDET time resolution using 5 ns decay time for the PMT signals. The mean time resolution obtained for neutrons (2.58 GeV/c of momentum) is about 0.45 ns (RMS). The neutron detection efficiency is about 35%; the contamination from the protons is estimated on the level of 7-8%.