Status of Preparations for E89044

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The collaborators of experiment E89044 have been working steadily since the first of this year to prepare for our scheduled running time. To this end we have met five times and will meet at least monthly from now on. Critical tasks have been assigned to working groups and they have periodically placed progress reports on our web page (see http://www.jlab.org/~kuss/e89044/e89044.html). The helium cryotarget work has gone well. During March, 1999 the target cell block was tested and installed. The gas panel is almost completed and has been partially tested. Work is in progress on read-outs and controls for the gas panel. The ^{3}He procurement is in progress. A purchase request was sent out on Aug. 23 and a Form 122 (transfer order of excess personal property) is being prepared to secure the transfer of the ^{3}He from G. Peterson/DOE Savannah River to Jlab. After the ^{3}He arrives standard Jlab procedures will be used to remove ^{3}H contamination. The target will be installed and commissioned from November 10 to December 10, 1999.

Early on we identified several specific areas that needed to be reviewed and studied:
a) The kinematics were reviewed and optimized to allow us to achieve the major goals of this experiment, within the beam time that has been allocated. These kinematics are now being more finely tuned to maximize the data that we can get in the large missing energy region.
b) There was concern about additional sieve slit measurements that would be needed to provide us with precise spectrometer matrix elements to cover the wide range of momenta that we will be measuring. It was determined that two such measurements would be needed and one of these has already been done this summer. The second will be done during our scheduled running time.
c) Detailed Monte Carlo studies have been done to understand the effects on the missing energy resolution of the ^{3}He target, beam energy spread, and spectrometer resolution. The most recent results indicate, that as planned, we will be able to achieve the resolution necessary to separate the two body state from the continuum in the $^3\mathrm{He}(\mathrm{e},\mathrm{e}'\mathrm{p})$ reaction.
d) Monte Carlo simulations have been done to study the effects of punch-through in the hadron spectrometer collimator on the measurements of the continuum region. These studies have shown that such punch-through events can be eliminated with appropriate software cuts on the out-going electron-proton vertex at the target, i.e. the y-target spectra.
e) Detailed simulations have been performed to determine under what kinematic conditions measurements in the large missing energy continuum region are not dominated by radiative tails from the two-body final state. We have determined that the missing momentum region above 300 MeV/c is the proper place to take data for large missing energies.
f) We have discussed various options to accurately measure and monitor the absolute luminosity. Calculations have been done for ^{3}He elastic scattering, and a method has been proposed to use accurate elastic scattering measurements along with studies of the effects of beam current on target density to realize a set of linked calibrations. We are also studying a proposal to use a third (non-magnetic) detector as a luminosity monitor. We will settle on the best scheme in the next month.
g) We have reviewed the status of several key facility developments that are needed to provide precise knowledge of the beam energy, beam energy spread, and spectrometer pointing and alignment. We are confident that we be able to achieve the necessary precision in these areas.

Overall the E89044 experimental collaboration is in good shape and will be ready to start taking data, as scheduled, on December 11, 1999.