

## The “One-page summary” for E-97-106

### Studying the internal small-distance structure of nuclei via the triple coincidence $(e, ep + N)$ measurement

Contact person: S. A. Wood

The reaction  $^{12}\text{C}(e, e'p + N)$  will be measured in Hall C at  $Q^2 = 2 (\text{GeV}/c)^2$ . The standard Hall C magnetic spectrometers will be used to measure the  $(e, e'p)$  part of the reaction. A third arm will be added, consisting of an array of scintillation counters, to measure neutrons and protons in coincidence with the outgoing high momentum electron and proton. The kinematical conditions were chosen carefully to minimize the contributions from Meson Exchange Currents and Final State Interactions. The purpose of the experiment is to determine the fraction of  $(e, e'p)$  events which are associated with NN short range correlations, as a function of the momentum of the proton in the nucleus. We will also compare  $pn$  with  $pp$  correlated pairs in nuclei.

We will use solid carbon targets mounted on a ladder attached to a liquid  $\text{D}_2$  target. The latter will serve as the target for the calibration reaction  $\text{D}(e, e'pn)$ . The neutrons will be detected by an array of plastic scintillator bars. Most likely, the UVA neutron bars used by GeN (E93-026) will be used. (Other neutron bars are available from Tel Aviv University or Kent State University if the UVA bars are not available.)

During February 2000 we ran parasitically with E89-044 in Hall A. We installed an array of 28 neutron counters,  $10 \times 10 \times 160 \text{ cm}^3$  each and measured singles rates and registered all counts in TDC's. We are now in the process of synchronizing the events from the neutron counter DAQ system with the  $(e, e'p)$  coincidences in the two spectrometers of Hall A in order to analyze triple coincidence data. The results of this analysis will aid in optimizing the luminosity and running conditions for the experiment.