

Abstract Submitted
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Studying close proximity nucleons in nuclei via triple-coincidence measurement of the $(e,e'pN)$ reaction RAN SHNEOR, Tel-Aviv University — This is a proposal to use the $(e,e'pN)$ reaction to study short range nucleon-nucleon correlations (NN SRC) in nuclei. In the context of this proposal we refer to NN SRC as a pre-existing pair of nucleons which have back-to-back high momenta balancing each other. The two existing magnetic spectrometers in Hall A of Jefferson lab (JLab) were used to measure the $(e,e'p)$ part of the reaction. The measurement required a third spectrometer (BigBite) and an array of scintillator counters, to simultaneously measure neutrons and protons in coincidence with the outgoing high momenta electron and proton. We chose kinematical conditions that will allow us to determine the fraction of $(e,e'p)$ events which are associated with NN SRC. This was done as a function of the momentum of the proton in the nucleus in the range 250-600 MeV/c. This experiment expands the existing limits to large Q^2 , $x > 1$ and “exclusiveness” which were not covered by earlier data or other proposals to JLab. The proposal was approved by the program advisory comity at JLab in Jan 2001 as experiment E01-015. Over 5 years were devoted to the design and the assembly of the two dedicated new detectors (BigBite and the neutron array), various tests and calibrations were conducted which where then followed by final commissioning in the experimental hall, during Dec 2004. The experiment took data from Jan to April 2005.

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