Two-nucleon short range correlation studied via the 4He(e,e'pN) triple coincidence measurement.

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Abstract:

We measured simultaneously the ⁴He(e,e'p), ⁴He(e,e'pp) and ⁴He(e,e'pn) reactions at $Q^2 = 2$ (GeV/c)², $x_B = 1.2$, and (e,e'p) missing-momentum (Pmiss) range from 400 to 830 MeV/c. The two nucleon knock out leave the residual system with missing mass of the deuteron and with low excitation energy. In coincidence with (e,e'p) events the probability to observe back-to-back high momentum recoil neutron reduced as a function of Pmiss from about 90% at 500 MeV/c to about half of that at 800 MeV/c. The fraction of (e,e'p) events with a recoil proton is about 10% over all the missing momentum range. These experimental observation are discuss in the context of the ratio of neutron-proton to proton-proton short range correlation pairs, and the role played by the tensor force.



Fig 1



Fig 2





Fig 4