

Abstract Submitted
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Measurement of the response of carbon fiber drift tubes to high energy neutrons ($E < 800$ MeV) ROBERT PATTIE, North Carolina State University, NNBARX COLLABORATION — A next generation experiment to measure the neutron-antineutron oscillation time will require a large area vertex tracker which is insensitive to the possible flux of high energy (up to 1 GeV) neutrons generated in the spallation cold neutron source. A neutron-antineutron annihilation event would most likely appear as 4 to 5 pions with total energy of ~ 2 GeV originating on the annihilation target. Several detector technologies exist are capable of reconstructing a multi-pion event to within 1 cm of the annihilation target, which would allow for high efficiency background rejection. However, it is possible for high energy neutrons from the spallation source to generate background events that mimic the annihilation signal. These backgrounds can be mitigated by shielding the source and building the vertex track with detectors that are insensitive to high energy neutrons. The NNBarX collaboration has begun a series of studies at the WNR spallation neutron target at LANSCE to characterize the response of possible vertex detectors. We present results on the efficiency of Ar/Ethane and Ar/Ethane/CF₄ filled carbon fiber drift tubes for neutrons with energy up to 800 MeV.

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