SEARCH FOR MEDIUM EFFECTS IN BACKWARD PION DEUTERON QUASIELASTIC SCATTERING ON ^{6}Li

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Abstract

The first results of the ITEP experiment on a backward pion-deuteron quasielastic scattering will be presented. The experiment has been done on the 3-m magnet spectrometer on a pion beam of the ITEP 10-GeV proton synchrotron. Nuclear targets were placed near the center of the $3\times1\times0.5$ m^3 dipole magnet. One half of the magnet was used as a forward-going deuteron spectrometer. Another half was used as a backward scattered pion (as well as a beam pion) spectrometer. Deuterons were identified by TOF with a 1.5 m^2 scintillator wall placed at 6 m from the target. All particles were registered in spark chambers. The resolution in an excitation energy of the rest nuclei and in an internal momentum of a quasideuteron cluster was 10-15 MeV and 20 MeV/c, respectively. The measurements were made with a set of nuclei from ^{6}Li to ^{209}Bi at three negative pion momenta 0.7, 0.9 and 1.3 GeV/c. It is the first experiment on backward πd quasielastic scattering in full kinematics. The result of calibration measurements with heavy water target and results for ^{6}Li will be presented. A backward πd elastic scattering is sensitive to a high momentum component of a deuteron wave function. A comparison of the energy dependence of free and quasielastic πd scattering on ^{6}Li which has a large ^{4}He-d cluster component will give an information on a difference in high momentum components in free and bound deuteron.

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