

Double-differential cross sections of neutron production at large angles in Xe + CsI collisions at 3.8 A GeV

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This report presents a measurement of the double-differential cross sections of neutron production in $^{124}\text{Xe} + \text{CsI}$ collisions at a beam energy of 3.8 A GeV. The experiment was performed at the BM@N facility using a compact TOF neutron spectrometer with stilbene scintillators coupled with a set of SiPMs. Data were acquired at laboratory angles of 95° , 110° , and 121° for neutron energies from 2 to 200 MeV. A detailed description of the data processing procedure is provided, including efficiency calculations, background subtraction, and corrections. The energy spectra of neutrons obtained for different angles demonstrate a good agreement between in the low energy region, that corresponds to isotropic emission of neutrons from the target spectator source. The presence of the intense low energy component below 10 MeV is not reproduced by the DCM-QGSM-SMM model and it proves that the model needs in further development

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