

Developing theory and experiment in particle physics in the University. Comparing hadron models with TestBeam detector for MINERvA

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MINERvA is a neutrino scattering experiment which seeks to accurately measure low energy neutrino and anti-neutrino interaction events using the NuMI beamline at Fermilab (Illinois, USA). The main channel of interaction is quasi-elastic neutrino-nucleon scattering, also having sensitivity to resonant scattering, coherent pion production and deep inelastic scattering. In addition, these interactions are studied considering targets of different atomic number to obtain dependence measurements with nuclear effects. The adequate knowledge of the interaction of hadrons (i.e. pions, protons, etc.) with the nuclei during their propagation in the detector, it is one of the requirements to obtain a high accuracy in identifying events such as those for deep inelastic scattering. The work team of PUCP studies the response of the energy deposition, both transversely and longitudinally, predicted by different theoretical models describing the interaction between hadrons and nuclei, and compared with data taken from the TestBeam detector (prototype used to study the calorimeter response of the MINERvA detector).