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Single neutral pion production on MINERvA using ME beam

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MINERvA is a neutrino scattering experiment that uses the NuMI beamline with the goal of measuring neutrino-nucleus cross sections on targets of different materials with high precision, as well as studying the internal structure of the nuclei of those materials. Among the different kinds of neutrino interactions that could occur in the detector, charged and neutral pion production are significant since they represent a large fraction of the events that can be detected. In particular, the study of single neutral pion production in multiple targets acquires relevance since not only will it provide constraints to the systematic errors of appearance and disappearance oscillation results in the range of energies of NOvA and DUNE, but also it will help to understand and compare the underlying structure of these nuclei. A previous result on this topic using a Low Energy antineutrino beam of 3.6 GeV in plastic scintillator has been published in 2015 by the MINERvA experiment. This time, I will present the current status of the single neutral pion production in C, Fe and Pb targets using a 6 GeV neutrino beam; and the future steps in order to get a precise cross section measurement on these materials.

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