

Exploring nuclear effects in neutrino interactions with MINERvA

Many neutrino oscillation experiments make use of high-Z detector material in order to maximize interaction rates. To correctly interpret the data, it is necessary to well understand nuclear effects in neutrino interactions that are absent for free-nucleon targets. Such knowledge is important not only for neutrino physics but for the nuclear physics as well.

MINERvA experiment located at Fermilab is designed to precisely measure the neutrino interaction cross-sections for channels that are of interest for current and future oscillation experiments. It will also examine the above-mentioned nuclear medium effects in neutrino-induced interactions such as final state modifications in the nuclei.

My poster will outline the nuclear targets to be employed in MINERvA. I will present the expected statistics samples for C, Fe, Pb as well as the cryogenic target for current and upcoming runs. I will also describe the design specifications for water module that was recently added to our list of proposed targets. Finally, I will outline what results we expect both in near and far term perspectives.

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