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# MINERvA medium-energy physics results

*Thursday, 7 July 2022 10:30 (15 minutes)*

MINER$\nu$A is a neutrino-nucleus interaction experiment in the Neutrino Main Injector (NuMI) beam at Fermilab. With the $\langle E_\nu \rangle = 6$ GeV Medium Energy run complete and $12 \times 10^{20}$ protons on target delivered in neutrino and antineutrino mode, MINER$\nu$A combines a high statistics reach and the ability to make precise cross-section measurements in more than one dimensions. Analyses of plastic scintillator and nuclear target data constrain interaction models, providing feedback to neutrino event generators and driving down systematic uncertainties for future oscillation experiments. Specifically, MINER$\nu$A probes both the intrinsic neutrino scattering and the extrinsic nuclear effects which complicate the interactions. Generally, nuclear effects can be separated into initial- and final-state interactions, both of which are not known *a priori* to the precision needed for oscillation experiments. By fully exploiting the precisely measured final-state particles out of different target materials in the MINERvA detector, these effects can be accurately probed. In this talk, the newest MINER$\nu$A analyses since the last ICHEP, which encompass a broad physics range, will be presented: inclusive cross-section measurements in the tracker and *in situ* measurements of the delivered flux, allowing detailed comparisons with generator predictions, and control of systematic flux uncertainties, respectively. Moreover, by exploiting the significant statistics reach offered by the large exposure, MINER$\nu$A measures rare processes.

## In-person participation

Yes

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