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EMPHATIC: A New Hadron Production Experiment for Improved Neutrino Flux Predictions

Tuesday, 4 December 2018 09:00 (30 minutes)

In the future LBNF beamline, the systematic uncertainty of the neutrino flux at the proposed DUNE Near Detector is currently approximately 10%, which will be a limiting systematic for most detector-only measurements. The neutrino flux uncertainty is dominated by uncertainties in hadron production cross sections. We propose a new, compact experiment to measure total and double-differential hadron production cross sections across a range of relevant beam energies, beam particle types and nuclear targets. These measurements will reduce the neutrino flux uncertainty to better than 5%.

Presenter: Dr PALEY, Jonathan (Fermilab)

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