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The Deep Underground Neutrino Experiment (DUNE): ND-LAr and the 2x2 Demonstrator

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In order to make precision measurements of Neutrino oscillation parameters, the Deep Underground Neutrino Experiment (DUNE) will improve both statistical and systematic uncertainties that current generation experiments are susceptible to. DUNE's neutrino beam of unparalleled intensity and 17 kton/module target mass will serve to mitigate statistical uncertainties to a level where systematic uncertainties of today's experiments would dominate the error budget. In order to fulfill its science program, DUNE will need to constrain such systematics from the ~10%-level of today's measurements to the few-percent level. The near detector complex will be the primary tool used to mitigate systematic uncertainties in neutrino-Argon interaction modeling, neutrino flux generation, and detector response. A novel liquid argon (LAr) time projection chamber (TPC) called ND-LAr is at the heart of DUNE's near detector complex. ND-LAr will feature a modular design with 70 optically segmented TPCs and a pixelated charge readout system to help cope with the high rate environment. This presentation will provide an overview of the ND-LAr design and present the status of the 2x2 Demonstrator, which is a prototype of ND-LAr that is set to operate in the NuMI neutrino beamline at Fermilab imminently.

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