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Liquid-Argon Time-Projection Chambers DIY

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Based on their millimeter resolution and potential on calorimetric capabilities, liquid-argon time-projection chambers (LArTPCs) offer unique opportunities for detection of weakly interacting particles, and have been selected as the technology of the far detector of the Deep Underground Neutrino Experiment (DUNE). While LArTPCs have demonstrated good performance at keV-scale in small-scale detectors, and at GeV-scale detecting neutrinos produced by accelerators, further development is required to cope with different situations, such as near detectors of intense neutrino beams for DUNE, or MeV-scale particles for detection of neutrinos produced from core-collapse supernova explosions or astrophysical gamma rays. A crucial step in LArTPC R&D is an integrated test of the active detector elements, such as the field cage, charge and light collection systems. In the talk, I will introduce the essential components of such a facility, and the ongoing and planned R&D projects at SLAC.

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