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Noble liquid based neutrino detectors

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The understanding of neutrino physics has made impressive advances in the last two decades thanks to the development of detectors for studying the phenomenon of oscillation. Next generation of experiments will perform precision measurements of the oscillation parameters, measure the mass hierarchy, the CP violation phase, and assess the possible existence of a fourth neutrino flavor. Noble liquid detectors, in particular liquid argon time projection chambers (LArTPCs), are playing a central role in this enterprise thanks to their capability of performing high quality measurements of neutrino interactions with 3D topological and calorimetric reconstruction and particle identification. A review of the most relevant experiments adopting LArTPC technique for detecting neutrino interactions in short and long baseline programs is presented.

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