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Using Large-Area Micro-channel Plate Photosensors in the Next Generation Water Cherenkov Neutrino Detectors

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The next generation of neutrino experiments will require massive and/or high resolution detectors to reach the sensitivity needed to measure CP violation in the lepton sector and the neutrino mass hierarchy. Recently the Large Area Picosecond Photo Detectors (LAPPD) Collaboration has begun developing new methods to fabricate a 20cm-square thin planar multichannel plate photosensors. The application of these novel devices to large water Cherenkov detectors could significantly enhance background rejection and vertex resolution in these detectors by improving spatial and timing information. We present details of the MCP fabrication method, status of the LAPPD project as well as preliminary results on the reconstruction capabilities for neutrino events in Water Cherenkov detectors.

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