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Using Fast Photosensors in the Next Generation Water Cherenkov Neutrino Detectors

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The next generation of neutrino experiments will require massive and high resolution detectors to reach the sensitivity needed to measure CP violation in the lepton sector and the neutrino mass hierarchy.
New photodetectors based on micro-channel plates are being developed by the Large-Area Picosecond Photo Detector (LAPPD) Collaboration. These photosensors have shown potential for excellent spatial and timing resolution. The application of these developments in photodetector technology to large water Cherenkov detectors could enhance background rejection and vertex resolution by using the gains in spatial and timing information.
We describe briefly the status of the LAPPD development and show preliminary results on the reconstruction capabilities for single particles in a 200-kton size water Cherenkov detector.

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