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CHerenkov detectors In mine PitS (CHIPS)

The CHerenkov detectors In mine PitS (CHIPS) Project seeks to substantially lower the cost per kiloton of neutrino detectors by instrumenting existing deep bodies of water located in long baseline neutrino beams. The initial location for CHIPS is the Wentworth Mine Pit 2W located near Hoyt Lakes MN, 7 m off-axis in the NuMI Beam, ~710 km from Fermilab. The pit is ~1250 m by ~750 m by ~60 m deep. Initial water chemistry and velocity measurements for CHIPS were made in Summer 2013. Plans for Summer 2014 include deployment of a ~100 m³ prototype detector near the bottom of the Wentworth pit. This device would use an aluminum frame, a fabric liner to isolate the detector water and five photomultiplier Digital Optical Modules (DOMs) borrowed from the ICECUBE Collaboration. Future CHIPS possibilities include larger detectors in the NuMI beam and a CHIPS-type detector behind a Missouri River dam at the second oscillation maximum of the proposed LBNE beam.

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