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Track reconstruction for CHIPS

CHerenkov detectors In mine PitS (CHIPS) is an R&D project aiming to develop large cost-effective neutrino detectors for future studies. We propose to deploy a water Cherenkov detector with total fiducial mass of 100 kton in the NuMI beam, submerged in a flooded mine pit in Northern Minnesota, at 7 mrad off-axis. Built in stages starting with a 10 kton module, it will deliver physics results to help constrain the value of CP violating phase until the start of LBNE operation, when it can be moved to observe the second oscillation maximum in the new beam. This poster presents the CHIPS concept and describes a preliminary track reconstruction algorithm. Based on a Geant4 simulation of the detector, this maximum-likelihood method will serve to optimise the design for maximum signal-background discrimination.

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Track Classification: Long Baseline Oscillations