

Abstract Submitted
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Simulation of the detector response of the 1-kton option of WATCHMAN MARC BERGEVIN, UC Davis, WATCHMAN COLLABORATION — WATCHMAN (WATER Cherenkov Monitoring of AntiNeutrinos) is a new US based experiment that will exploit the low energy antineutrino signal from reactors, supernova and decay-at-rest antineutrino beams to pursue a broad physics program. WATCHMAN aims to be the first detector in the world to detect low energy antineutrinos in water, by adding a gadolinium dopant that increases the efficiency for the final-state neutron arising from the antineutrino interactions on protons in the water. In this talk, I will provide an overview of the expected detector response to the different low-energy physics - including reactor antineutrinos, fast-neutron contamination, radionuclide contamination and U/Th contamination. I will also discuss expected rates for each of these processes at the current preferred underground installation-site, the Fairport mine in Painesville Ohio. I will focus on the unique advantages of the gadolinium dopant, which enables WATCHMAN to significantly reduce the background contamination and allows a lower energy threshold compared to other Water Cherenkov Imaging detectors.

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