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Long Distance Reactor Antineutrino Flux Monitoring[1] STEVEN DAZELEY, MARC BERGEVIN, ADAM BERNSTEIN, Lawrence Livermore National Lab. — The feasibility of antineutrino detection as an unambiguous and unshieldable way to detect the presence of distant nuclear reactors has been studied. While KamLAND provided a proof of concept for long distance antineutrino detection, the feasibility of detecting single reactors at distances greater than 100km has not yet been established. Even larger detectors than KamLAND would be required for such a project. Considerations such as light attenuation, environmental impact and cost, which favor water as a detection medium, become more important as detectors get larger. We have studied both the sensitivity of water based detection media as a monitoring tool, and the scientific impact such detectors might provide. A next generation water based detector may be able to contribute to important questions in neutrino physics, such as supernova neutrinos, sterile neutrino oscillations, and non standard electroweak interactions (using a nearby compact accelerator source), while also providing a highly sensitive, and inherently unshieldable reactor monitoring tool to the non proliferation community. In this talk I will present the predicted performance of an experimental non proliferation and high-energy physics program.

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