

Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Sensitivity of large-scale neutrino detector to 40K geoneutrinos

YOCHAVED UNGAR, University California Los Angeles — Uranium, Thorium and Potassium are the primary radioactive constituents of Earth's mantle and crust. Neutrinos released during the decay of these radioactive elements can be used to directly study the bulk composition of Earth's interior. While existing detectors such as a KamLand and Borexino have detected ^{232}Th and ^{238}U , they do not have the sensitivity to observe the low energy (<1.8 MeV) ^{40}K geoneutrinos. ^{40}K geoneutrinos have been predicted to be the most abundant of the radioactive elements in Earth's interior and therefore are of particular interest. I am studying the feasibility of using a large scale (1000 ton) scintillator based detector to search for ^{40}K geoneutrinos that interact with the scintillator through the process of antineutrino-electron scattering. I will present the results of calculations of neutrino flux predictions and the expected number of scattering events in a kiloton-scale detector as well as studies of backgrounds and their effect on the viability of detecting ^{40}K geoneutrinos.

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Date submitted: 29 Jul 2015

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