

Abstract Submitted
for the APR10 Meeting of
The American Physical Society

Estimating the Lithium-9 Production Rate due to Muon Capture in Double Chooz CARA HENSON, UC Davis — Neutrino detectors rely on low background levels in order to detect rare neutrino interactions. A major background for the Double Chooz and other reactor neutrino experiments is Lithium-9, a beta delayed neutron emitter that mimics the inverse decay signal. Radioactive isotopes like Lithium-9 are known to be produced by muon spallation processes on Carbon, but at Double Chooz depths production from muon capture on Carbon may be significant. The production of Lithium-9 from muon capture is sensitive to the stopping muon rate and the branching ratio of muon capture to Lithium-9. The branching ratio to Lithium-9 is not known, but may be a significant fraction of the 81.4% particle emission branching ratio. The stopped muon rate in the Double Chooz far detector is simulated using a detailed overburden model and the resulting Lithium-9 production rate is estimated. The prospects for measurement in Double Chooz is also evaluated.

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Date submitted: 21 Oct 2009

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