Abstract Submitted
for the DNP12 Meeting of
The American Physical Society

**Searching for nuclear excitation by electronic transition in U-235**[1]

P. CHODASH, E.B. NORMAN, E. SWANBERG, UC Berkeley, J.T. BURKE, R.J. CASPERSON, S. WILKS, Lawrence Livermore National Laboratory — Nuclear excitation by electronic transition (NEET) is a rare nuclear excitation that is predicted to occur in numerous isotopes, including U-235. NEET can occur when a nuclear transition closely matches the energy and multipolarity of an electronic transition. U-235 has a 1/2+ isomeric state that decays to the 7/2- ground state with a transition energy of 77 eV and a half life of 26 minutes. Theory predicts that electronic transitions exist within a partially ionized uranium plasma that would allow NEET to occur. The NEET process would excite U-235 into its isomeric state and then it will subsequently decay to the ground state via internal conversion. It is currently not known if this excitation occurs in U-235 and at what rate. In order to generate the uranium plasma with the correct conditions, a high power Q-switched Nd:YAG laser will irradiate a sample of highly enriched uranium. The resulting plasma will be collected on a catcher foil and counted using a microchannel plate detector. Current progress on the experiment will be presented.

[1]This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract DE-AC52-07NA27344. This work was further supported by the U.S. DHS, UC Berkeley, and the NNIS Fellowship.

Perry Chodash
UC Berkeley

Date submitted: 02 Jul 2012 Electronic form version 1.4