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A feasibility study on the production of ^{235m}U by nuclear excitation by electronic transition[1] PERRY CHODASH, ERIC NORMAN, ERIK SWANBERG, UC Berkeley, JASON BURKE, MAU CHEN, MARK FOORD, LLNL — Nuclear excitation by electronic transition (NEET) is predicted to occur in nuclei where a nuclear transition closely matches the energy and multipolarity of an electronic transition. NEET is considered to be the inverse of bound internal conversion. This rare form of excitation is predicted to occur in many nuclei. In ^{235}U, the 1/2+ isomeric state decays to the 7/2- ground state with a transition energy of 77 eV and a half life of 26 minutes. This decay proceeds by internal conversion emitting a low energy electron. In order for NEET to occur in uranium, it must be partially ionized to create an electronic configuration that has a transition that matches the nuclear transition. Numerous experiments have been performed to search for this excitation mechanism in ^{235}U by creating a plasma using either a laser or an electron beam. The difficulty in finding this excitation is due to the low excitation rates, 10^{-9}s^{-1}to 1 s^{-1}, as well as the ability to detect the low energy internal conversion electrons. The results of previous experiments as well as the current experimental plan will be discussed.

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