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Searching for U-235m produced by Nuclear Excitation by Electronic Transition[1] PERRY CHODASH, ERIC NORMAN, University of California, Berkeley, JASON BURKE, SCOTT WILKS, ROBERT CASPERSON, 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. When a nuclear transition matches the energy and the multipolarity of an electronic transition, there is a possibility that NEET will occur. If NEET were to occur in U-235, the nucleus would be excited to its 1/2+ isomeric state that subsequently decays by internal conversion with a decay energy of 77 eV and a half-life of 26 minutes. Theory predicts that NEET can occur in partially ionized uranium plasma with a charge state of 23+. A pulsed Nd:YAG laser operating at 1064 nm with a pulse energy of 780 mJ and a pulse width of 9 ns was used to generate the uranium plasma. The laser was focused on small samples of both depleted uranium and highly enriched uranium. The plasma conditions created by the intense laser pulse were varied by changing the spot size of the laser on the target. The resulting plasma was collected on a plate and the internal conversion electrons were focused onto a microchannel plate detector by a series of electrostatic lenses. First results will be presented.

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