Abstract Submitted
for the APR06 Meeting of
The American Physical Society

Sub-threshold neutron-induced fission cross sections of ^{240,242}Pu FREDRIK TOVESSON, TONY HILL, Los Alamos National Laboratory — The ^{240,242}Pu(n,f) cross sections have been measured with a moderated spallation target at the Lujan facility at Los Alamos Neutron Science Center (LANSCE). In this experiment the cross section was measured from thermal energies up to the onset of the fission threshold at a few hundred keV. There are plans to extend the investigated energy range by using the WNR facility, where an un-moderated spallation target produces neutrons up to hundreds of MeV. The capture and fission cross sections for ^{240,242}Pu are important for fast reactor applications and are being measured in support of the Advanced Fuel Cycle Initiative (AFCI). The feasibility of measuring fission cross sections over this large energy rang has already been shown for ^{237}Np, and the present work is the first step towards measuring more short-lived isotopes. These Pu-isotopes are alpha-emitters, and ^{240}Pu has a half-life of only 6560 years. It was shown that the present experimental technique was suitable for handling targets with this high activity.

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Date submitted: 13 Jan 2006 Electronic form version 1.4