

Abstract Submitted  
for the DNP12 Meeting of  
The American Physical Society

**Neutron Capture and Fission Measurement on  $^{238}\text{Pu}$  at DANCE<sup>1</sup>**  
ANDRII CHYZH, CHING-YEN WU, ELAINE KWAN, ROGER HENDERSON,  
JOLIE GOSTIC, LLNL, AARON COUTURE, HYE YOUNG, JOHN ULLMANN,  
JOHN O'DONNELL, MARIAN JANDEL, ROBERT HAIGHT, TODD BRE-  
DEWEG, LANL, DANCE TEAM, PPAC TEAM — Neutron capture and fission  
reactions on actinides are important in nuclear engineering and physics. DANCE  
(Detector for Advanced Neutron Capture Measurement, LLNL) combined with  
PPAC (avalanche technique based fission tagging detector, LLNL) were used to  
study the neutron capture reactions in  $^{238}\text{Pu}$ . Because of extreme spontaneous  
 $\alpha$ -radioactivity in  $^{238}\text{Pu}$  and associated safety issues, 3 separate experiments were  
performed in 2010-2012. The 1st measurement was done without fission tagging on  
a 396- $\mu\text{g}$  thick target. The 2nd one was with PPAC on the same target. The 3rd  
final measurement was done on a thin target with a mass of 40  $\mu\text{g}$  in order to reduce  
 $\alpha$ -background load on PPAC. This was the first such measurement in a laboratory  
environment. The absolute  $^{238}\text{Pu}(n,\gamma)$  cross section is presented together with the  
prompt  $\gamma$ -ray multiplicity in the  $^{238}\text{Pu}(n,f)$  reaction.

<sup>1</sup>This work was performed under the auspices of the US Department of Energy by Los  
Alamos National Laboratory under Contract DE-AC52-06NA25396 and Lawrence  
Livermore National Laboratory under Contract DE-AC52-07NA27344.

Andrii Chyzh  
LLNL

Date submitted: 02 Jul 2012

Electronic form version 1.4