Abstract Submitted for the DNP06 Meeting of The American Physical Society

Applying the Surrogate Technique to Stockpile Stewardship J.T. BURKE, L.A. BERNSTEIN, J. ESCHER, L. AHLE, J.A. CHURCH, F.S. DIETRICH, K.J. MOODY, E.B. NORMAN, LLNL, L. PHAIR, P. FALLON, R.M. CLARK, M.A. DELEPLANQUE, D.L. BLEUEL, I.Y. LEE, A.O. MACCHI-AVELLI, M.A. MCMAHAN, M. WIEDEKING, E. RODRIGUEZ-VIEITEZ, F.S. STEPHENS, LBNL, C. PLETTNER, H. AI, Yale University, C. BEAUSANG, B. CRIDDER, Univ. of Richmond — Recent work has focused on developing the absolute probability and external ratio surrogate techniques for use in determining neutron-induced cross sections on unstable nuclei. In this talk we will present a new "internal" ratio method where a ratio of different exit channel probabilities for the same compound nucleus can be used to determine the cross section for an unknown exit channel when a cross for a different exit channel (e.g. determining (n,γ) when (n,f) is known. This technique can be used in combination with an "external" ratio method measurement to "bootstrap" several surrogate (n,x) cross section from a single surrogate measurement. We will present results from two experiments using STARS+LIBERACE at the 88-Inch cyclotron at LBNL to determine the ${}^{237}U(n,\gamma)$ and ${}^{237}U(n,2n)$ cross sections using this "internal" ratio method. This work was sponsored by UC-LLNL under Contract No. W-7405-Eng-48 and Grant Nos. DE-FG-05NA25929, DE-FG52-06NA26206, and DE-FG02-05ER41379.

> Jason Burke LLNL

Date submitted: 30 Jun 2006

Electronic form version 1.4