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Surrogate measurements of (n,2n) cross sections using Neutron-STARS R.J. CASPERSON, J.T. BURKE, J.E. ESCHER, R.O. HUGHES, N.D. SCIELZO, Lawrence Livermore National Laboratory, M. BARBUI, K. HAGEL, E. MCCLESKEY, J.B. NATOWITZ, S. WUENSCHEL, H. ZHENG, Texas A&M University, Y.G. MA, Shanghai Institute of Applied Physics — Accurate (n,2n) cross sections on actinides are important for reactor modeling, but experimental challenges make direct measurements of these cross sections difficult. The surrogate ratio technique can overcome many of these challenges by allowing the determination of an unknown reaction cross section using a direct reaction on a more-convenient target nucleus. In the case of an (n,2n) reaction, the outgoing particle from the direct reaction provides a time tag and an effective neutron energy, and the charged particle beam generates a relatively low neutron background. We plan to use Neutron-STARS, which is a combination of the Silicon Telescope Array for Reaction Studies (STARS) and the TAMU Neutron Ball, to field (n,2n) measurements on actinide targets using ratios to known (n,f) cross sections. Preparation for this experimental campaign is underway, and progress will be presented. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344, and was supported by the U. S. Department of Energy under Grant DE-FG03-93ER40773 and by The Robert A. Welch Foundation under Grant A0330.

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