

Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Determining (n,γ) and $(n,2n)$ cross sections for radioactive isotopes using surrogate reactions¹ N.D. SCIELZO, J.T. BURKE, J.E. ESCHER, Lawrence Livermore National Laboratory, STARS/LIBERACE COLLABORATION — Direct measurements of neutron-reaction cross sections on unstable nuclei are extremely challenging due to the difficulties associated with radioactive targets and neutron beams. The surrogate reaction method, an indirect approach which uses a combination of reaction modeling and experimentally-measured decay probabilities, is being used to determine (n,γ) and $(n,2n)$ cross sections for short-lived nuclei where the compound nucleus of interest can be created through light-ion reactions on stable or long-lived targets. The STARS/LiBerACE silicon and germanium detector arrays were used to detect light ions and γ -rays in coincidence. Techniques are being explored to take into account the differences in angular momentum in the surrogate and neutron-induced reactions. Results for gadolinium and yttrium isotopes will be presented and some of the challenges associated with this technique will be discussed.

¹Prepared by LLNL under Contract DE-AC52-07NA27344.

Nicholas Scielzo
Lawrence Livermore National Laboratory

Date submitted: 11 Jan 2011

Electronic form version 1.4