Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

MANTRA: Measuring Neutron Capture Cross Sections in Actinides with Accelerator Mass Spectrometry[1] W. BAUDER, University of Notre Dame, R.C. PARDO, ANL, P. COLLON, University of Notre Dame, T. PALCHAN, R. SCOTT, R. VONDRASEK, O. NUSAIR, C. NAIR, ANL, M. PAUL, Raach Institute of Physics, F. KONDEV, J. CHEN, ANL, G. YOUINOU, INL, M. SALVATORES, INL and CEA-Cadarache, G. PALMOTTI, J. BERG, T. MADDOCK, INL, G. IMEL, Idaho State University — With rising global energy needs, there is substantial interest in nuclear energy research. To explore possibilities for advanced fuel cycles, better neutron cross section data are needed for the minor actinides. The MANTRA (Measurement of Actinide Neutron TRAsmutation) project will improve these data by measuring integral (n,γ) cross sections. The cross sections will be extracted by measuring isotopic ratios in pure actinide samples, irradiated in the Advanced Test Reactor at Idaho National Lab, using Accelerator Mass Spectrometry(AMS) at the Argonne Tandem Linac Accelerator System (ATLAS). MANTRA presents a unique AMS challenge because of the goal to measure multiple isotopic ratios on a large number of samples. To meet these challenges, we have modified the AMS setup at ATLAS to include a laser ablation system for solid material injection into our ECR ion source. I will present work on the laser ablation system and modified source geometry, as well as preliminary measurements of unirradiated actinide samples at ATLAS.

[1]This work was supported by the U.S. Department of Energy, Office of Nuclear Physics, under Contract No. DE-AC02-06CH11357.

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Date submitted: 19 Jun 2013 Electronic form version 1.4