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**Constraining the cross section of $^{82}$Se(n,$\gamma$)$^{83}$Se to validate the $\beta$-Oslo method** K. CHILDERS, S.N. LIDDICK, B.P. CRIDER, A.C. DOMBOS, R. LEWIS, A. SPYROU, NSCL / MSU, A. COUTURE, S. MOSBY, C.J. PROKOP, LANL, F. NAQVI, University of Notre Dame, A.C. LARSEN, M. GUTTORMSEN, L.C. CAMPO, T. RENSTROM, S. SIEM, University of Oslo, D.L. BLEUEL, LLNL, G. PERDIKAKIS, CMU, S. QUINN, JHUAPL — Neutron capture cross sections of short-lived nuclei are important for a variety of basic and applied nuclear science problems. However, because of the short half-lives of the nuclei involved and the nonexistence of a neutron target, indirect measurement methods are required. One such method is the $\beta$-Oslo method. The nuclear level density and $\gamma$ strength function of a nucleus are extracted after $\beta$-decay and used in a statistical reaction model to constrain the neutron capture cross section. This method has been used previously, but must be validated against a directly measured neutron capture cross section. The neutron capture cross section of $^{82}$Se has been measured previously, and $^{83}$Se can be accessed by the $\beta$-decay of $^{83}$As. The $\beta$-decay of $^{83}$As to $^{83}$Se was studied using the SuN detector at the NSCL and the $\beta$-Oslo method was utilized to constrain the neutron capture cross section of $^{82}$Se, which is compared to the directly measured value.

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