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Surrogate measurement of the ^{238}Pu(n, f) cross section[1] J.J. RESSLER, Lawrence Livermore National Laboratory, J.T. BURKE, J. ESCHER, STARS/LIBERACE COLLABORATION — New reactor designs and materials, reprocessing efforts, and transmutation of nuclear waste play significant roles in the future of nuclear energy. New or improved neutron measurements on a number of isotopes are needed to determine feasibility, effectiveness, and safety issues for the novel engineering efforts. Data collection is often hampered by the need for radioactive targets; the use of radioactive targets is limited to longer-lived isotopes due to the large background induced by the decay of the material. Near stability, alternate, or "surrogate" reactions can be used to determine cross sections for isotopes of interest. In the actinide region, short-lived isotopes often have longer-lived neighbors; these isotopes can be used to form the same compound nucleus as the initial desired reaction. Decay from the compound state is assumed to be independent of the production reaction, allowing reactions with the neighboring isotopes to be used as a surrogate for the reaction of interest. Results from the neutron induced fission cross section of ^{238}Pu, performed via surrogate ^{239}Pu$(\alpha, \alpha f)$ will be shown. Further surrogate reactions of interest to nuclear energy data needs will also be discussed.

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