

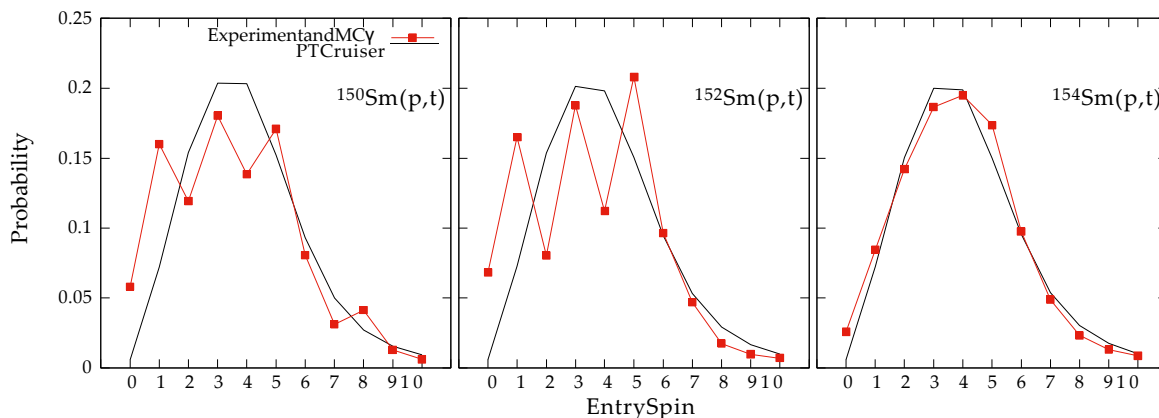
Entry-level spin distributions and relative γ -neutron branching ratios of samarium isotopes populated by the (p,t) reaction



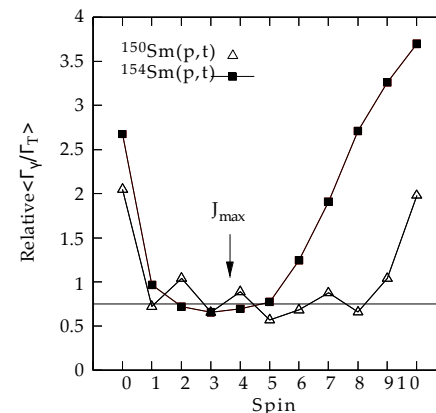
Triton- γ coincidences from the $^{150;152;154}\text{Sm}(p,t)$ reactions detected with Hyperion (former STARLiTeR) at Texas A&M are used to study the spin distribution and Γ_γ/Γ_T of levels populated by surrogate reactions.

This comparison utilized a new nuclear reaction code MC γ to calculate cascades in order to extract the spin distribution from reactions and another (PTCruiser) to calculate the spin distribution semi-classically for the (p,t) reaction. It is suggested that the spin distribution deduced for lighter Samarium nuclei may suffer from the limited applicability of extreme statistical models to spherical or lesser-studied nuclei.

The relatively constant Γ_γ/Γ_T ratios extracted for the most intensely-populated levels indicates that use of the Weisskopf-Ewing limit may be a good approximation for surrogate reactions, although the staggering which appears to be present in the lesser-deformed Sm isotopes indicates a possible need to introduce corrections into the theory of surrogate reactions beyond the Weisskopf-Ewing limit.



Spin distributions are extracted from experiment using MC γ compared with those calculated by PTCruiser.



Γ_γ/Γ_T of levels extracted above the separation using data and MC γ .

