

Hauser-Feshbach Calculations in Deformed Nuclei

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Hauser Feshbach calculations are a basic tool for calculating cross sections for reactions induced by low energy neutrons. For non-spherical nuclei deformation effects are usually taken into account through the use of level densities which incorporate deformed levels. This step is important but it leaves out a part of the differences between deformed and spherical nuclei.

A special Hauser Feshbach code has been written which does not assume each level is spin J has $(2J + 1)$ degenerate states. This change greatly reduces the weight of large J states relative to small J states in a Hauser Feshbach calculation. The consequences are minimal for the continuum but can significantly modify cross sections to particular states.