

Predicting and constraining level densities and gamma-ray strength functions

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Level densities and gamma-ray strength functions are critical inputs for statistical reaction calculations of (n,g) , (n,n') , $(n,2n)$, and multiple other reactions. Ideally, we predict these Hauser-Feshbach inputs, along with suitable optical potentials, for the vast number of isotopes of interest to applications. More realistically, we will have to pursue a combination of theoretical predictions, indirect approaches, and direct measurements to achieve our objectives. I will describe ongoing work to combine microscopic structure and reaction theories to predict and constrain level densities and gamma-ray strength functions needed for Hauser-Feshbach calculations of neutron-induced reactions on isotopes near and away from the valley of stability.

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Author: Dr ESCHER, Jutta (Lawrence Livermore National Laboratory)

Presenter: Dr ESCHER, Jutta (Lawrence Livermore National Laboratory)