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**Radiative neutron capture reactions to study photon strength functions in connection to reaction theories**  
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Statistical Hauser-Feshbach calculations with the width fluctuation correction for the neutron radiative capture process in the fast energy region are still unsatisfactory, in particular to obtain reasonably accurate capture cross sections. This is mainly due to relatively large uncertainties in the model parameters used; the level density, the parity distribution in the continuum, and the photon strength function. It was showed that the calculated cross section for a deformed system strongly depends on the M1 scissors mode, although the amplitude of collective motion is expected to be small. This is indeed consistent with the fact that a global calculation of neutron capture in the fission product region tends to underestimate the experimental data. We study how the neutron capture process is influenced by the nuclear model parameter inputs. Combining nuclear structure theory with the reaction calculation, we estimate the photon strength, which might be distributed at low excitation energies, by comparing the calculation with experimental data.