STATISTICAL DESCRIPTION OF THE RADIATIVE STRENGTH FUNCTIONS

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A closed-form thermodynamic pole approach is developed for average description of the E1 radiative strength functions using the microcanonical ensemble for initial states. A semiclassical description of the collective excitation damping in the method is based on modern physical notion on the relaxation processes in Fermi systems. It is shown that the model is able to cover a relatively wide energy interval, ranging from zeroth gamma-ray energy to values above GDR peak energy. It gives rather accurate means of simultaneous description of the γ-decay and photoabsorption strength functions in the medium and heavy nuclei. For gamma-ray energies near neutron binding energies the calculations within the proposed model describe experimental data somewhat better for heavy nuclei with A >150 as compared to other closed-form approaches.