SENSITIVITY OF THE DIRECT-SEMIDIRECT MODEL CALCULATIONS OF THE INTEGRATED NEUTRON CAPTURE CROSS SECTION ON THE EXACTNESS OF THE FINAL STATE WAVE FUNCTION

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The direct-semidirect (DSD) capture model proved to be very sucessfull in the description of the neutron radiative capture to the low excited states of final nuclei and for neutron energies which correspond to the intermediate state in the region of the giant dipole resonance (GDR).

In this contribution the DSD model calculations of integrated cross sections are analysed by the comparison with the available experimental data of ^{89}Y, ^{140}Ce and ^{208}Pb excitation functions for complete (^{208}Pb) or incomplete (^{89}Y, ^{140}Ce) integrated (n,γ) cross sections. Special attention is paid to the dependence of the calculated values on the exactness of the final state wave function. For the experimentally known single particle levels (usually of low excitation) these functions are calculated from the Saxon-Woods (S-W) potential of the depth adjusted separately to each level. Highly excited bound states are usually not well known. Wave functions for such a levels are, less exactly, exctracted from the S-W potential of the average depth. For the nuclei considered here the bound levels are rather well known so both types of wave functions were calculated. Resulting integrated cross sections differ at most 25 %.