

REPORT TO THE NEANSC WORKING PARTY ON INTERNATIONAL EVALUATION COOPERATION FOR THE MAY, 1994 MEETING IN OAK RIDGE

Subgroup 16: Nuclear Level Densities for Model Calculations of Neutron Induced Reactions with 52Cr, 56Fe and 58Ni

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Objective: The objective of this Subgroup is to understand the effects of different level density formalisms in model calculations for these materials, and recommend a level density formalism and parameters for use in these isotopes.

Scope: The scope of this Subgroup includes the isotopes 52Cr, 56Fe and 58Ni, the most important of the structural material isotopes. All level density formalisms commonly used in model codes will be studied to determine an adequate one for use in these isotopes. The energy range of the study will cover from about 1 to 20 MeV.

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Work Program: This Subgroup was formed as a result of Subgroup 1, which discovered during its work that differences in calculated cross section shapes were due to different level density formalisms used in the calculations. This Subgroup will extend the work started in Subgroup 1, initially by studying the differences due to back-shifted and Gilbert-Cameron level density formalisms. Benchmarking against accurate data for selected reactions can help choose among the formalisms. Initially, work will be done at energies where precompound effects are minimized. Level densities formalisms using spectral density and other methods will also be studied as time permits. Model codes will be benchmarked using the same input data to assure accurate interpretation of level density studies.