IEC-208

======== presented to the NEA WPEC Brookhaven meeting, Apr 1999======

The following summarizes my ideas on a new WPEC subgroup:
"Testing, and Validation of Nuclear Modeling Codes
for Hauser-Feshbach, Preequilibrium, Direct, and Fission Reactions"

Background:
Nuclear modeling codes based on Hauser-Feshbach, preequilibrium, direct, and fission reactions have played an important role in nuclear data evaluation work, and in the interpretation of experimental data taken at numerous laboratories. The original authors of many of the most widely used codes (e.g. GNASH, STAPRE, ALICE, ...) have retired. However, new codes building upon these important codes are currently under development.

Aims:
The new subgroup would be comprised of individuals who are actively working on the development of new, state-of-the-art, nuclear reaction modeling codes. Participants might include Chadwick, Koning, Herman, Kawano, Hilaire, Chiba. Many of the new codes under development use FORTRAN90, C or C++. These codes will include some nuclear reaction theory formulations that have not been widely applied in previous work. They also include more exact treatments of reaction calculations, due to the present availability of large computational resources, replacing previous approximate algorithms.
The subgroup would focus on identifying test-cases for the purpose of checking the predictions of each code. These test cases will be useful for validating computations of: full Hauser-Feshbach treatment; width-fluctuation theories; fission models; quantum and semiclassical preequilibrium theories; gamma-ray strength functions, and level density formulations.
It is anticipated that interactions among participants of the subgroup would result in a positive exchange of ideas, leading to the improvement of all codes being considered.

Mark B. Chadwick
Group T-2, Theoretical Division
MS B243, Los Alamos National Laboratory
Los Alamos, NM 87545
Tel. 505 667 9877, Fax 505 667 9671
email: mbchadwick@lanl.gov