

1st RCM on Updating and Improving Nuclear Level Densities for Applications

Contribution ID: 12

Type: **not specified**

Validation of level densities for and with TALYS

Tuesday 25 March 2025 09:45 (45 minutes)

The current beta version (2.1) of TALYS contains 8 level density models.

The latest version of the RIPL discrete level database and the RIPL-3 database for D0 values have been used to assess the global quality of these models and to perform a new consistent parameterization for all nuclides with these models.

Further validation with adjusted level density models have been done for average radiative widths, MACS, and (n,gamma) cross sections in the whole fast neutron range, obviously accounting for the additional model dependence of photon strength functions.

The constant temperature model (Gilbert-Cameron) and the new BSKG3 microscopic model come out as the best 2 models, with the BSKG3 model seen as superior for a description all open reaction channels up to 20 MeV when compared to experimental data.

A template for new databases of D0, D1, Gamma_gamma and MACS, all in YANDF format, is proposed to allow for validation of current and future level density models.

Author: KONING, Arjan (IAEA)

Presenter: KONING, Arjan (IAEA)

Session Classification: Evaluation/validation (45' talks, 30' coffee)