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A new benchmark of spallation models

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Spallation models have to be benchmarked in order to use the best one according the reactions studied and/or to know their reliabilities. Developments of spallation models are linked to experimental results and this explains why fifteen years ago a first benchmark has been launched, restricted to particle production, followed by a second one on residues. Since then new data have been measured and computer tools are improved day after day, so three institutes, CEA-Saclay (France), Soreq (Israel) and FZJ (Germany), decided to carry out a new benchmark, under the auspices of the IAEA, taken into account all types of results, particle and residue production, with a possibility to update the data (experimental and code calculation) via a web site.

An experimental database has been defined during a first workshop held in Trieste (ICTP) in February 2008 covering the whole energy range with the most important targets. Then these data have been collected and uploaded on the web site (www-nds.iaea.org/spallations) as the calculation results provided by all developers willing to participate. Seventeen different models or model combinations have been received. All these results have been processed (Comparisons with experimental data) and made available for everybody on the web site. A second workshop, held at the CEA-Saclay in February 2010, has presented the conclusions of this benchmark: General trends according observables, energies and targets, and specific qualities and shortcomings of each model.

This is the first time that so many spallation models and experimental data are compared, and all results made available to everybody on a web site. Web site and results will be presented.

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