

## Topical issue on perspectives on nuclear data for the next decade

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The second edition of the International Workshop on *Perspectives on Nuclear Data for the Next Decade*, P(ND)<sup>2</sup>-2, was held in order to bring together again the experts involved in nuclear data production, from both the modelling and the experimental sides. It was held in Bruyères-le-Châtel, France, on 14–17 October 2015, organized under the auspices of the Nuclear Energy Agency (NEA) of the Organization for Economic Co-operation and Development (OECD), and hosted by the Commissariat à l’Energie Atomique et aux Energies alternatives (CEA) in its DAM Ile-de-France research center.

The declining number of nuclear data experts in the world and the reduced number of experimental facilities, combined with an increasing need for nuclear data for the existing and emerging nuclear applications, causes a high risk for evaluators to only focus on producing data rather than developing new tools and models. This risk, already identified in 2005, is even more prevalent today and the initial goal of identifying the basic physics issues which will be crucial to address in the future, is more relevant than ever.

However, since the first P(ND)<sup>2</sup> workshop in 2005, significant progress has been made on both experiments and modelling. Massively parallel computers, which are now routinely used, enable studies which were unachievable a few years ago. New issues have also surfaced and are challenging the evaluation process. The P(ND)<sup>2</sup>-2 workshop was therefore organised, 10 years after the first one, to shed a renewed light on all the issues related to the production of nuclear data, as well as on the new emerging demands. The questions which were addressed during the P(ND)<sup>2</sup>-2 workshop were the following:

- Can the pure microscopic models be used to produce evaluations with the required accuracy, and if not how can they be improved or adjusted?
- What is the status of the most complex theoretical approaches such as CDCC, microscopic fission and pre-equilibrium with respect to nuclear evaluation requirements?
- Is there any way to improve the predictive power of phenomenological approaches with the help of microscopic models?
- How can we address and judge the quality of the covariance matrices when we are able to produce them?
- What are the needs in terms of new experiments to further constrain the evaluations and models?
- What kind of new data can be obtained with current or upcoming experimental facilities?
- How can the needs for even more precise experimental data be met?
- How can computers be used to tackle the remaining modelling challenges?
- How can better global collaboration help improve the quality of nuclear data?

The aforementioned questions were discussed in order to identify key issues to be worked on for the next 10 to 15 years. The meeting was focussed on tools and methods which are not presently used for producing nuclear data, but, which are expected to become useable for evaluation in the next decade. Finally, even if the P(ND)<sup>2</sup>-2 workshop was mainly focused on theoretical and modeling issues, state-of-the-art experimental works and upcoming experimental programs were also presented.

The present Topical Issue of *The European Physical Journal A* presents some answers to the above questions in the shape of selected articles by contributors to the P(ND)<sup>2</sup>-2 workshop.

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*Guest Editors*