Preface

Special Issue on the
PHYSOR 2012 International Conference
on the Physics of Reactors

Jess C. Gehin

Oak Ridge National Laboratory

and

G. Ivan Maldonado

University of Tennessee

This special issue of *Nuclear Science and Engineering* (*NSE*) features selected papers from the 2012 American Nuclear Society (ANS) International Conference on the Physics of Reactors (PHYSOR 2012), which was held April 15–20, 2012, in Knoxville, Tennessee. This meeting is the latest in the series of meetings sponsored by the Reactor Physics Division and cosponsored by the Mathematics and Computation Division of ANS, and it is widely recognized as the preeminent venue for the timely dissemination of research, development, and experience related to the field of reactor physics. The wide variety of topics covered by this meeting were organized into 15 different tracks and included topics such as core analysis methods, deterministic and Monte Carlo transport, reactor concepts and designs, advances in modeling and simulation of reactors, research reactors, experimental facilities, nuclear fuel cycle, education, and nuclear data.

The PHYSOR 2012 conference had a total of 490 participants involved in the workshops, plenary sessions, panels, and technical sessions, which included a large international representation comprising roughly 47% of the attendees. In addition, the meeting strongly supported the participation of students, which resulted in a large student contingency of 128 participants (26% of the attendees). A total of 423 full papers were submitted and reviewed, and of these 364 were accepted for the meeting. As discussed above, these papers were arranged in 15 tracks leading into 66 technical sessions. Several high-profile speakers also presented notable topics during the opening plenary, during lunch, and at the meeting banquet.

A particular challenge for the meeting organizers and the Technical Program Committee was providing the journal editor with a list of papers recommended for inclusion in this special issue of *NSE*. From this list, the editor selected 12 outstanding papers that provide a good representation of the meeting's content. They include three papers on the solution of the transport equation with an emphasis on performing whole-core transport simulations, one paper on neutron noise calculations, two papers on improving the efficiency and accuracy of solving the burnup equations, two papers on improvements in multigroup libraries and resonance self-shielding, three papers on experiments, validation, and nuclear data measurements, and one paper on safety analysis for an advanced reactor concept.

We gratefully acknowledge Dan Cacuci, the editor of *NSE*, and the ANS *NSE* staff for their efforts in making this issue possible. We also appreciate the work by Germina Ilas in organizing the selection process and coordinating with the journal editor. Finally, please be aware that a companion PHYSOR 2012 special issue of *Nuclear Technology* published in September 2013 (volume 183) includes additional outstanding papers selected specifically for that journal's readership.