Foreword

The international conference SNA+MC2010, organized by Japan Atomic Energy Agency (JAEA) with three co-organizers, was successfully held at Hitotsubashi Memorial Hall in Tokyo, from Oct. 17 to Oct. 21 with totally 377 participants from 27 countries. This conference is a joint conference of successful series of "Supercomputing in Nuclear Application (SNA)" and "Monte Carlo (MC)". SNA is a series of conferences which started after the first conference at Mito Japan in 1990 and follows conferences held in Karlsruhe Germany (1993), Saratoga Springs USA (1997), Tokyo Japan (2000), Paris France (2003) and Monterey USA (2007). Periodic MC conferences can be traced back to the conference in Lisbon Portugal (2000), subsequently, Chattanooga USA (2005).

SNA+MC 2010 aimed at reviewing new trends and the status of high-performance computing (HPC), technical advancements like multi-scale/multi-physics simulations, and advances in MC methodologies. The background of the conference is the rapid growth of the computing power. The CPU power has reached a stage of peta-flops, and the latest HPC frontier is now directed from peta to exa-level. Another background is rapid progress in the simulation techniques including the MC methodologies. This conference covered all aspects of technical developments in the novel approaches as well as the conventional ones over two areas of SNA and MC. This conference thus provided an extensive opportunity to exchange up-to-date scientific and technical information.

The conference opened in the morning of Oct. 18. Keynote speech titled "Nuclear Research and Development Strategy in Japan" was given by Dr. Shunsuke Kondo, the chairman of Japan Atomic Energy Commission, after the welcome speeches from JAEA, Organization for Economic Co-operation and Development/Nuclear Energy Agency (OECD/NEA), and Ministry of Education, Culture, Sports, Science and Technology (MEXT). He depicted the present and future direction of nuclear energy research and stressed the importance of numerical simulations for R&D of science-based nuclear technology.

Plenary sessions were held for three days from Oct. 18 to Oct. 20 to give a talk on hot topics on computer science, computational science, and Monte Carlo simulations. In the first day, trends of supercomputers in Japan, EU, and US were reviewed by three representative researchers. Three talks in the second day were devoted to address the state of the art technologies of the advanced supercomputing nuclear applications. The final plenary session was focused on the advances in Monte Carlo methodologies. Two speakers gave excellent review of Monte Carlo codes and human phantoms.

As for the technical session, 53 oral sessions and 3 poster sessions were held during the conference. Totally 259 and 75 presentations were given in oral and poster sessions respectively. These presentations covered various research themes in the computational nuclear research field.

This volume of the journal, Progress in Nuclear Science and Technology (PNST), is published as selected papers of SNA+MC 2010. Not all the papers presented at the conference are included in this volume. This volume includes only papers that are desired to be published in PNST by authors and meet the acceptance criteria of the journal through the extensive peer reviews. We hope this volume will provide readers with valuable information, inspiration and enthusiasm for research in the SNA and MC fields.

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Technical Program Committee of SNA+MC 2010
Editorial Committee of this Volume