



# Radiation Protection and Shielding Division (RPSD) Spring 2013 Newsletter

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Vice-Chair of RPSD (2012-2013)  
Rensselaer Polytechnic Institute

## Message from the Chair

RPSD Members:

This will be my second and final newsletter message as Chair. First of all, let me thank the members of the Technical Program Committee, the division officers and the members of the Executive Committee for their service. In addition, I want to thank all of you who have contributed in others ways during the past year.



The changing of the guard is an excellent time to reflect on the division's activities and make plans for the upcoming year(s). One thing we need to consider is if we are indeed serving the radiation protection community. We are doing a competent job of meeting our objectives as stated in our bylaws for the shielding community. However, our division activities often seem to be largely a reflection of things that are happening in other divisions, M&C as an example. So I would encourage the members of the division to provide suggestions to the incoming Executive Committee on how to better meet our stated objectives in regard to the radiation protection community. Our upcoming 2014 Topical Meeting provides an avenue to see if we can attract more participation by radiation protection professionals.

ICRP Publication 103 provides an updated set of radiation protection recommendations that resulted in some modifications, principally to the tissue and radiation factors used in the computation of effective dose. ICRP Publication 116 provides a revised set of external dose conversion coefficient which reflect these changes. Given the global nature of our industry, it would seem that our domestic regulating organizations should move to adopt these changes sooner rather than later, so that a calculated mSv in the USA is the same as a mSv computed in other countries. Changes in operational quantities such as ambient dose equivalent also should be forthcoming from the ICRU in the next year or so. The 2014 topical meeting should provide an excellent forum to discuss the impact of these changes in the practice of shielding and radiation protection.

Although previously announced, let me personally congratulate Dr. Richard Faw for being the recipient of the 2012 Rockwell Award for his lifetime contributions to radiation protection and shielding. We hope to see Dick at the opening plenary session at the Atlanta meeting to accept the award.

I hope to see many of you at the Atlanta meeting. For those of you who might need a nontechnical distraction, the Braves are in town from Saturday – Thursday of the ANS meeting (Giants and then the Mets). I hope that all of you have a great summer.

Nolan Hertel (nolan.hertel@me.gatech.edu)  
Chair of RPSD, 2012-2013  
Georgia Institute of Technology

## **RPSD 2014 to be Hosted by the Oak Ridge/Knoxville ANS Section**

The RPSD Executive Committee (EC) voted in February on bid proposals that were submitted by local sections for hosting RPSD 2014. The EC voted to accept the proposal from the Oak Ridge/Knoxville section, which has hosted 10 topical meetings in the past 10 years. Calendar placement with ANS National has not been finalized, but the expected conference dates are from **September 14<sup>th</sup> – 18<sup>th</sup>, 2014.**

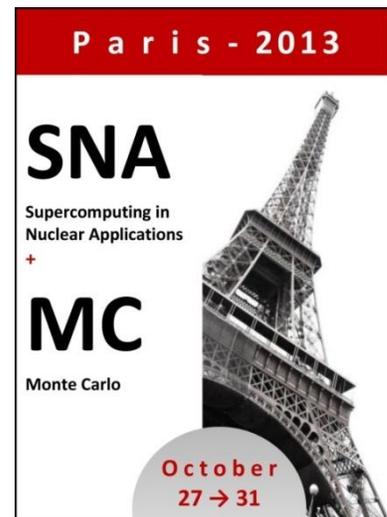
Planning for RPSD is underway, with Lawrence Townsend as the General Chair, Irina Popova as Assistant General Chair, and Bernadette Kirk as Honorary Chair. Major sessions will include the following:

- Medical Physics
- Radiation Detection and Measurement
- Radiation Shielding
- Radiation Protection
- Reactor Facilities
- Accelerator Facilities
- Medical Facilities
- Methods and Applications
- Nuclear Data
- Space Applications
- Low-Dose Effects
- Benchmark Experiments and Analysis

While the bid proposal considered meeting locations in Chattanooga and Knoxville, Tennessee, the organizing team has settled on a Knoxville venue. Details about the meeting will be posted on the RPSD 2014 website (which is [rpsd2014.org](http://rpsd2014.org)) as they become available. If you are interested in helping organize RPSD 2014, particularly the technical program, please contact Lawrence Townsend ([ltownsen@utk.edu](mailto:ltownsen@utk.edu)).

## SNA + MC 2013

### Joint International Conference on *Supercomputing in Nuclear Applications + Monte Carlo 2013, Paris*



*« Pluri- and trans-disciplinarity,  
towards new mathematical modelling and numerical simulation paradigms »*



The first edition of **SNA+MC 2010** was held in **Tokyo** in 2010. This joint international conference on "**Supercomputing in Nuclear Application (SNA)**" and "**Monte Carlo (MC)**" will be renewed; **SNA+MC 2013** will be held in **Paris** from **27 to 31 October 2013**.

The long-standing synergy that exists between the evolution of computers dedicated to scientific calculations and that of the Monte Carlo methods, from the theoretical point of view as well as its general usage, certainly legitimizes such a convergence.

The first ambition of **SNA+MC 2013** is to review recent breakthroughs in HPC and in Monte Carlo, as well as in the usage made of them in the very varied fields of nuclear applications.

**SNA+MC 2013** will take place under the hallmark of trans-disciplinary work, encompassing types of interdependent physical phenomena and different physical scales (from infra-femtometric level to macroscopic level). Theorists, experimentalists, developers and end-users will address such issues as the rapid growth of computing power (moving towards Exascale) with awareness of today's complex realities, experience and digital experience, in the various worlds of industry, applied and/or fundamental research institutions and academia, whose borders and connections vary from one country to another.

The conference aims to highlight renewed strategy and simulation paradigms, and to identify future conceptual and technological breakthroughs. The objective is to increase the predictive capability of the calculation tools designed and developed by teams of engineers and researchers all over the globe.

Studies and research may be presented orally and/or with posters and **SNA+MC 2013** wishes to offer an exchange of views forum, mutually beneficial to members of both the research community and the industrial community, not restricted to nuclear applications.

Finally, **SNA+MC 2013**, attuned to the social and cultural contexts of science and technology, will be held at the **Cité des Sciences et de l'Industrie de la Villette in Paris**.

The proximity of the Ourcq canal and the green open spaces of the Parc de la Villette, together with the gastronomic and artistic surroundings, will enable participants to combine utility with pleasure for five full days of work and exchanges. This will also contribute to the success warmly anticipated for the **SNA+MC 2013** conference.

### Preliminary Track-Lines Definition

|  |   |
|--|---|
| <b>Computational Nuclear Applications</b>                                | <b>Computational Science</b>  |
| Track 1 : Nuclear Reactor Analysis                                       | Track 1 : Theory and Advanced Modeling for Basic Physical Data          |
| Track 2 : Thermalhydraulics  | Track 2 : Specific Computational Methods and Methodologies              |
| Track 3 : Material Science and Physical Chemistry                        | Track 3 : Multi-Physics-Coupling and Code System Developments           |
| Track 4 : Safety   | Track 4 : Basic Physical Data and Uncertainty - Sensitivity Computation |
| Track 5 : Technological Design and Analysis                              | Track 5 : Computational Geometries - CAD                                |
| Track 6 : Medical Applications   |   |
| Track 7 : Numerical Simulations for Detectors and Measurements           |   |
| <b>Monte Carlo Methods for Simulation</b>                                | <b>Advanced Parallelism and HPC Strategies</b>                          |
| Track 1 : Advanced Monte Carlo Methods for Physical Phenomena Simulation | Track 1 : Deterministic Methods, Parallelism and HPC                    |
| Track 2 : Time Dependent Monte Carlo                                     | Track 2 : Monte Carlo Methods, Parallelism and HPC                      |
| Track 3 : Acceleration Techniques for Monte Carlo Simulations            | Track 3 : Advanced HPC Strategies for Applications                      |
| Track 4 : Uncertainty , Bias, Convergence in Monte Carlo                 |   |
| Track 5 : Advanced Monte Carlo Capabilities                              |   |
| Track 6 : New Monte Carlo Applications and Benchmarking                  |   |

- Consistent with the leitmotiv of **SNA+MC 2013**, several plenary conferences given by invited speakers are planned on the following subjects:
  - *Advanced Simulation of Nuclear Reactors,*
  - *Advanced Computing in Europe,*
  - *Monte Carlo Methods,*
  - *Massive Data Processing, ...*
- The world wide *particle transport Monte Carlo codes* will be present in frame of a special exhibit session.
- A workshop dedicated to a full-size Monte Carlo reactor core simulation through a *Monte Carlo Computational Performance Benchmark* will be held.
- *Exhibition stands are proposed to institutional players in the areas of research, academic training and scientific information.*

**SNA+MC 2013 web site:** <https://www.sfen.fr/SNA-and-MC-2013>

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## **Dr. Peter Caracappa Appointed the Technical Program Chair**

Dr Peter Caracappa has become RPSD's Technical Program Chair. Currently a faculty member and RSO at Rensselaer Polytechnic Institute, Peter has served ANS in many roles. Please send suggestions on future program needs to Peter at [caracp3@rpi.edu](mailto:caracp3@rpi.edu). From our Bylaws and Rules: the Program Committee must be composed of not fewer than five (5) members, including the Program Committee Chair. The Chair of the Program Committee shall be appointed by the Division Chair for a term of four (4) years. The Program Committee is responsible for organizing technical sessions of interest to Division members at National Meetings. The Program Committee Chair shall be responsible for representing the Division at meetings of the Society National Program Committee.

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## **Call for Nominations for Honors and Awards**

We would like to encourage our members to nominate their peers to the following RPSD awards – email to Prof Nolan Hertel at [nolan.hertel@me.gatech.edu](mailto:nolan.hertel@me.gatech.edu):

### **Rockwell Award**

The Lifetime Achievement award, also referred to as the Rockwell Award, is based on long-term contributions in research, development of technology, or education in radiation measurement, protection, shielding, and dosimetry. It is expected that most recipients will have been long-time active members of the American Nuclear Society. Moreover, most recipients will be authors of publications that made significant contributions to the science of radiation protection and shielding.

### **Professional Excellence Award**

The basis for this award would usually be a major contribution to the state of the art, an important publication, a major technical achievement, or a sustained record of significant accomplishment and technical excellence.

### **Service Recognition Award**

This award is in recognition of outstanding past or current service to the Society and/or Division by a member of the Division. This award may be characterized as a distinguished service award or outstanding service award.

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## *Newsletter Contributions Needed*

The next newsletter is published in the Fall of 2013. If you have news items of interest to RPSD members, please send such contributions to the Vice-Chair, Prof. Glenn Sjoden ([sjoden@gatech.edu](mailto:sjoden@gatech.edu)), by October 1, 2013.

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## **Special Session Proposal for ANS Winter 2013:**

### **“Transport Calculation Benchmark Solutions for Evaluated Shielding, Criticality, and Reactor Physics Problems”**

Submitted to [http://www.new.ans.org/meetings/session/forms/session\\_approval.php](http://www.new.ans.org/meetings/session/forms/session_approval.php) (conf # SA1352558547)

Proposed Sponsorship: RPSD, RPD, MCD

Session Sponsors: Glenn Sjoden ([Sjoden@gatech.edu](mailto:Sjoden@gatech.edu)), Skip Kahler ([akahler@lanl.gov](mailto:akahler@lanl.gov)), and Charlotta Sanders ([sander59@unlv.nevada.edu](mailto:sander59@unlv.nevada.edu))

Summary: This session, to be sponsored by the ANS Joint Benchmark Committee (co-sponsors RPSD, MCD, RPD) is for researchers to submit papers on code calculations and solutions based on radiation shielding, criticality safety, or reactor physics evaluated benchmark problem experiments. Problems must be selected from among numerous existing problems available in:

SINBAD ([www.oecd-nea.org/science/wprs/shielding/sinbad](http://www.oecd-nea.org/science/wprs/shielding/sinbad)),

- (i) ICSBEP([icsbep.inl.gov](http://icsbep.inl.gov)), or
- (ii) IRPHEP([irpheap.inl.gov](http://irpheap.inl.gov)).

The purpose of this session is to promote code evaluation, new methods development, as well as to increase awareness regarding evaluated benchmark utility in code/benchmark applications, and augment their potential for use in current/forward leaning research, training, and education.



## **RPSD Program at ANS Annual Meeting in Atlanta**

The ANS Annual Meeting in Atlanta is rapidly approaching, and the Radiation Protection and Shielding Division has an interesting and diverse set of technical sessions, discussions, and tutorials planned. A successful meeting depends on your participation, so please take advantage of the following sessions at the upcoming meeting:

1. Radiation Protection and Shielding–Roundtable, Mon. p.m.
2. Computational Tools for Radiation Protection and Shielding, Tues. a.m.
3. Space Radiation Shielding Methods and Applications, Wed. a.m.
4. Radiation Protection and Shielding: General, Wed. a.m.
5. ADVANTG Tutorial: Automated Variance Reduction for MCNP, Thurs. a.m.

### **Radiation Protection and Shielding Roundtable**

Of note in the list of sessions above is the Monday afternoon RPSD Roundtable session. If you have not attended one of these before, this session is designed as an opportunity for all members to present and discuss new work, preliminary results, or current problems that they are facing. Members are invited to make a 10 minute presentation each (scheduled first-come, first-served), followed by an open discussion. You never know what you are going to get in this session, but it is likely to feature some of the most cutting-edge work in the division. Bring a few slides of your own, or just come to join in the discussion!

### **Program Committee Meeting**

All are welcome to the RPSD Program Committee meeting, scheduled for Sunday of the meeting from 12:30-1:30 in the Baker room of the Regency. If you have a suggestion for a session at a future meeting, have interest in chairing a session or a panel, or just want to help shape the technical content of the ANS meetings, please stop by. You can contact RPSD Program Chair Peter Caracappa at [caracp3@rpi.edu](mailto:caracp3@rpi.edu).

### **Call for Papers for ANS Winter Meeting**

Submissions are now open for the RPSD sessions at the ANS Winter Meeting in Washington, DC this November. The submission deadline is June 14, 2013. Papers are being accepted to the following sessions:

1. Best of ICRS/RPSD 2012 (invited only)
2. Computational Tools for Radiation Protection and Shielding
3. Making Ethics Real in Nuclear Engineering–Panel

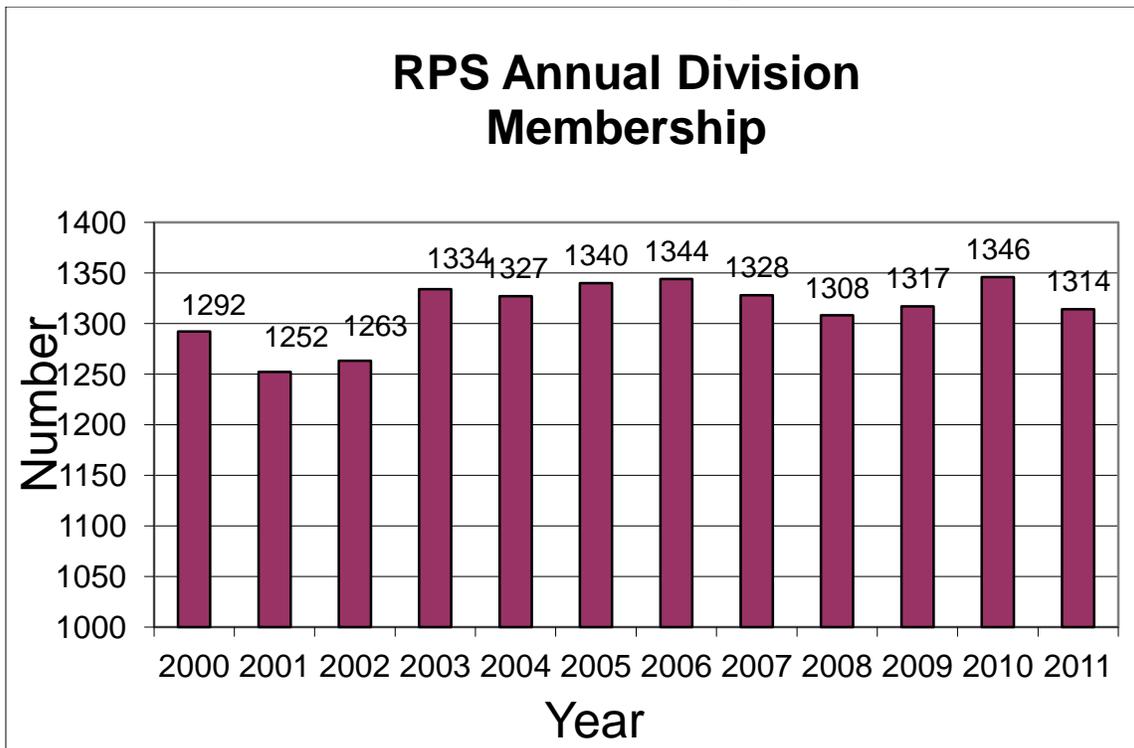
4. Radiation Protection and Shielding–Roundtable
5. Shielding Problems for Fusion Devices
6. Transport Calculation Benchmark Solutions for Evaluated Shielding, Criticality, and Reactor Physics Problems
7. Radiation Protection and Shielding: General

**Call for Reviewers**

RPSD members are needed to review the summaries submitted to ANS meetings. Reviews are all completed electronically at your own convenience through the Electronic Submission and Paper Review system. Summaries are reviewed for content, clarity, validity, format, and appropriateness of subject, but you don't need to be an expert to participate. Each reviewer is assigned 3-5 summaries to review (based upon number of submissions and number of reviewers), generally with 2-3 weeks to complete the review.

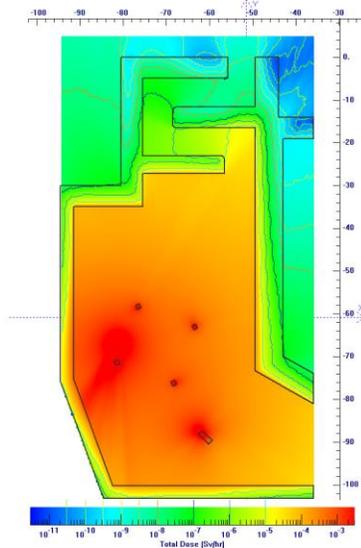
If you are interested in serving as a reviewer, please contact Peter Caracappa at [caracp3@rpi.edu](mailto:caracp3@rpi.edu).

**2012 RPSD Membership Data**



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## New Features Added to Moritz



The photograph is provided courtesy of Ken Van Riper ([www.whiterockscience.com](http://www.whiterockscience.com))

Moritz is now playing an important role in a number of shielding projects involving proton beams for medical applications. It is used to build the models and to analyze and plot the results in the form of mesh tallies. A typical mesh tally plot is illustrated on the left. The model is an accelerator room. The source is beam spillage on accelerator components.

New features are being added to Moritz to help with the shielding work and correcting things that did not work exactly as intended. For example, the total dose equivalent shown in the plot is the sum of neutron, photon, and proton dose mesh tallies. Originally the user would add 2 mesh tallies on a dialog, a tedious process when there are 4 or more sets of mesh tallies. New Moritz commands have been created to add mesh tallies and delete intermediate combinations. Now the user just reads a command file to create multiple total dose mesh tallies.



**Photo taken at ANS Winter 2012 in San Diego**

For Japan ICRS12 photos, please visit this website (by courtesy of Ken Van Riper) :  
<http://www.whiterockscience.com/Japan2012/Japan2012.html>

## RPSD – 2013 Election Results



**X. George Xu, Chair**

Professor and Head, Nuclear Engineering,  
Rensselaer Polytechnic Institute, Troy, NY



**Glenn E. Sjoden, Vice Chair**

Professor, Nuclear, Radiological and Medical  
Physics Program, Georgia Institute of  
Technology



**Joel M. Risner, Secretary**

Research and Development Staff Member,  
Radiation Transport Group, Reactor and  
Nuclear Systems Division, Oak Ridge National  
Laboratory, Oak Ridge, TN



**Shaheen A. Dewji, Treasurer**

PhD Candidate, Nuclear & Radiological  
Engineering Program, Georgia Institute of  
Technology, Atlanta, Georgia and Metz,  
France



**Peter F. Caracappa**

**Executive Committee**

Radiation Safety Officer and Lecturer,  
Rensselaer Polytechnic Institute



**Michael T. Wenner**

**Executive Committee**

Senior Engineer, Westinghouse Electric  
Company LLC, Cranberry Township,



**Arkady Serikov**

**Executive Committee-Non US**

Staff Research Scientist, Karlsruhe Institute of  
Technology (KIT), Germany



**Margaret K. Sudderth**

**Executive Committee-Student**

Student, Georgia Institute of Technology

# **Radiation Protection & Shielding Division**

## **2013-2014 RSPD Officers**

|                         |            |
|-------------------------|------------|
| 2014 X. George Xu       | Chair      |
| 2014 Glenn E. Sjoden    | Vice Chair |
| 2014 Joel M. Risner     | Secretary  |
| 2014 Shaheen Azim Dewji | Treasurer  |

## **Members**

|                           |                         |
|---------------------------|-------------------------|
| 2015 Eric A. Burgett      | 2016 Peter F. Caracappa |
| 2015 Shaheen Azim Dewji   | 2014 Steven J. Nathan   |
| 2014 Douglas E. Peplow    | 2015 Irina I. Popova    |
| 2014 Joel M. Risner       | 2014 Arkady Serikov     |
| 2014 Erik F. Shores       | 2014 Glenn E. Sjoden    |
| 2014 Margaret K. Sudderth | 2016 Michael T. Wenner  |
| 2014 X. George Xu         |                         |

## **Staff Liaison**

Bonnifer Ballard

## **Board Liaison**

Stephen P. Schultz

## **Ex Officio**

Hans D. Gougar

Nolan E. Hertel