

# AMERICAN NUCLEAR SOCIETY MATHEMATICS AND COMPUTATION DIVISION

November, 2008  
<http://www.mcd.ans.org/newsletters>

## Message from the Chair

Dear M&C Members:

It is a great pleasure for me to be writing to you as the Chair of the Mathematics and Computation Division. My one-year term started on July 1. I would like to give thanks to my predecessors, Tom Sutton and Bill Martin, and to welcome newly elected Division officers: Vice Chair/Chair-Elect Todd Palmer, Secretary Hatice Akkurt, and Treasurer F. Azru Alpan. I would also like to congratulate our newly elected members of the executive committee Aaron Watson, Jeremy Sweezy, Imre Pazit and Kevin Clarno. In addition, it is a great pleasure to announce that I have been elected as the member of the Board of Directors of ANS (a three-year term), thanks to Bill Martin who nominated me, and all of you who voted for me. Thank you!

By the time you receive this letter, we will know who the new U.S. President will be, and what most likely be the direction of long-overdue nuclear renaissance in this country. The rapidly changing landscape regarding such pressing issues as global warming, need for affordable and safe nuclear energy, long-term solution for high-level radioactive waste, national and international security and threat reduction will provide new and unique challenges and opportunities for current future nuclear scientists and nuclear engineers.

Several Nuclear Engineering Departments celebrated their 50<sup>th</sup> anniversary this year, including University of California - Berkeley, University of Michigan - Ann Arbor, and MIT. Congratulations!

Please note all the activities of the M&C discussed in this newsletter. At the ANS June meeting in Anaheim, I organized the roundtable on "Current Issues in Computational Methods" that had a large audience. We had three excellent speakers: Dr. Nam Dinh from INL, who talked about "*Avenues and Challenges in Computational Nuclear Power Safety*," Dr. Glen Hansen, INL, who talked about "*Vision for a Next Generation Fuel Performance Simulation Capability*," and Dr. David Nowak, INL, who presented a talk on "*Advanced Modeling and Simulations in Nuclear Energy - Future Directions*." I would like to thank the speakers and all of you that attended the roundtable. Todd Palmer is organizing the M&C Roundtable at the ANS Reno meeting, that will be held on Monday from 2:30 to 4:00 pm. You are invited to attend a talk by Frank Graziani from LLNL, who will be talking about the Computational Methods Workshop that he has been hosting in Lake Tahoe, CA, for the past six years.

Our colleagues from the Reactor Physics Division organized very successful PHYSOR '08 conference in beautiful Interlaken, Switzerland, from September 14-19, 2008. Many of you attended this conference that had a record number of submitted papers - 668! Thanks to the hard work of all of you, over 300 summaries have been submitted for the M&C 2009 conference that will be held on May 3-7, 2009, in Saratoga Springs, New York. I know that you are busy reviewing summaries!

Our M&C Division membership has increased slightly from 1,142 in 2007 to 1,147 in 2008, and represents about 10 % of the total ANS National membership. The student membership is 241 of the 1,147 total, or about 21% for the M&C division, which is one of the highest student involvements in the ANS. This year, we supported financially the 2008 Student Conference, which was hosted by Texas A&M, the Student Travel Reimbursement Program, and ten students will be sponsored to attend the ANS Winter Meeting President's Reception in Reno.

I would like to encourage all of you to continue with your active participation in the M&C activities, and invite all of you to attend our Program and Executive Committee meetings at each national ANS meeting.

See you in Reno!  
Jasmina Vujic  
Chair, M&C Division

## 2008 ANS Summer meeting: Anaheim, California



ANS 2008 Winter Meeting and Nuclear Technology Expo, November 9-13 Reno, Nevada

### Mathematics and Computation Division Sessions: (Parenthesis indicates co-sponsorship)

#### SUNDAY, 9 November 2008 11:00 a.m. – 1:00 p.m.

Computational Medical Physics Working Group: Room 151

#### SUNDAY, 9 November 11:00 a.m. – 1:00 p.m.

MCD-RPSD-RPD Joint Benchmark Meeting: Sierra 1

#### SUNDAY, 9 November 2008 1:00 p.m. - 2:00 p.m.

Program Committee Meeting: Room 151

#### SUNDAY, 9 November 2008 2:00 p.m. - 4:00 p.m.

Executive Committee Meeting: Room 151

#### MONDAY, 10 November 2008 p.m.

Current Issues in Computational Methods – Roundtable

#### TUESDAY, 11 November 2008 a.m.

Transport Methods: General

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#### WEDNESDAY, 12 November 2008 a.m.

Advances and Issues in Computational Phantom Modeling

## Program Committee

### 2009 Mathematics and Computational Topical Meeting

The 2009 International Conference on Mathematics, Computational Methods and Reactor Physics will be held May 3-7, 2009 in **Saratoga Springs, New York**. It is being organized by the Northeast New York local section, and will be held at the Saratoga Hotel (formerly known as the Saratoga Hotel and Conference Center). While the original deadline for 1500-word summaries has passed, any summaries received before October 31 will be guaranteed a place in the paper review. We will do our best to accommodate summaries received after October 31, but can make no guarantees. The conference registration portion of the website will become active in January.

The subject categories include:

- Deterministic Transport Theory Methods
- Monte Carlo Transport Theory Methods
- Hybrid Methods in Particle Transport
- Perturbation and Variational Methods
- Computational Fluid Dynamics
- Computational Environmental Science
- Nuclear Data Methods and Analysis
- Criticality and Safety Analysis
- Computational Materials Science

- High-Performance / Large-Scale Computing
- High-Impact Software Design
- Characteristic and Diffusion Theory Methods
- Nuclear Reactor Analysis
- Reactor Kinetics Methods
- Accelerators and Subcritical Systems
- Computational Plasma Physics
- Radiation Protection and Shielding
- Methods for Advanced Reactor Concepts
- Optimization Methods
- Computer Codes and Benchmarks (Poster Session)
- Multi-Physics Simulation Methods
- Computational Medical Physics
- Verification and Validation Methods

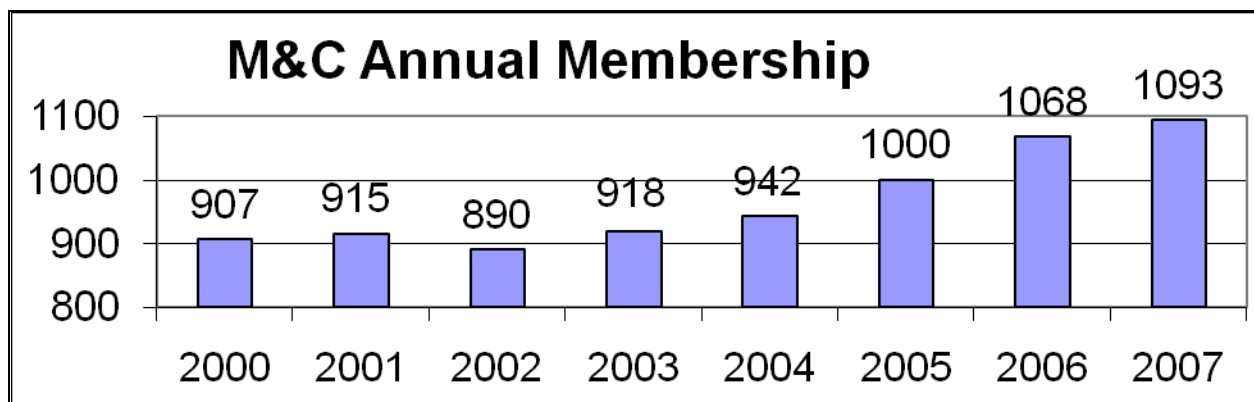
The conference website is available at [http://local.ans.org/ne-ny/topical\\_2009\\_neny.html](http://local.ans.org/ne-ny/topical_2009_neny.html).

There will be a meeting of the topical meeting Technical Program Committee at the ANS Winter Meeting in Reno, Nevada. It will be held Monday, November 10 at 1:30 pm in the same room as the Current Issues in Computational Methods Roundtable. The Roundtable will follow at 2:30 pm. Check the final Reno conference program for the room name.

## Membership Committee

Greetings MCD members!

Our M&C Division membership has increased slightly from 1,142 in 2007 to 1,147 in 2008, and represents about 10 % of the total ANS National membership. The student membership is 241 of the 1,147 total, or about 21% for the M&C division, which is one of the highest student involvements in the ANS. Please note that these peak membership numbers are taken in June of each year, and any members who have not paid their national dues by July are dropped from the division and national roster. ANS membership renewal notices are sent out each fall, with two reminders, so please be sure to return your renewal form so that we have an accurate representation of our division's size. The graph below shows the membership numbers in December of each of the past eight years. Hopefully everyone will renew by December so that we can show a positive trend!



## 2008 ANS-10 Standards

### ANS-10 Standards Subcommittee Report

The M&C Division sponsors the ANS-10 Standards Subcommittee. Currently, ANS-10 has two Standards under development or revision.

The Working Group for ANS-10.4 has finished all work on the revision and final ANSI approve of the draft as an American National Standard is expected the week of October 18. This revision, titled **Verification and Validation of Non-Safety Related Scientific and Engineering Computer Programs for the Nuclear Industry**, provides criteria for the verification and validation of research and other non-safety-related software.

A new draft standard, ANS-10.7 **Non-Real Time, High Integrity Software for the Nuclear Industry**, is also being developed. This standard will address high integrity, non-real time safety analysis, design, simulation software includes calculations or simulations that can have critical consequences if errors are not detected, but that are so complex that typical peer reviews are not likely to identify errors. Because of the potential consequences of errors and the difficulty of timely detection and correction of errors in such software, this standard will go beyond verification and validation to include quality provisions not found in ANS 10.4.

The ANS-10.7 Working Group will meet on Tuesday, November 11 at 7:00 a.m. in the Teton room during the ANS Winter Meeting to continue work on the draft. All interested parties are invited to attend.

Andy Smetana  
Chair ANS-10

## 2008 Joint Benchmark Committee

The Joint Benchmark Committee (JBC) will meet on Sunday Nov 9 from 11 to 1 in the Sierra 1 room in Reno. The JBC is struggling with its identity as a committee. The Committee has really never reached its potential as the benchmarking organ of the ANS. I urge you to participate now if you have ideas and an interest in ANS benchmarking activities. After many years as a member and chair of M&C benchmarking activities, I will soon step down as M&C, JBC Chair. This comes after publishing my book, *Analytical benchmarks in Nuclear Engineering*" (available free from OECD/NEA Data Bank) and the realization that M&C needs new, more far reaching and relevant, benchmarking activities.

B. Ganapol  
M&C, JBC Chair

## **2008-2009 ANS MATHEMATICS AND COMPUTATIONS DIVISION OFFICERS<sup>1</sup>**

Chair: Jasmina L. Vujic (Univ. of California – Berkeley, 510/643-8085, [vujic@nuc.berkeley.edu](mailto:vujic@nuc.berkeley.edu))  
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Secretary: Hattice Akkurt (Oak Ridge National Laboratory, 865/576-3513, [akkurth@ornl.gov](mailto:akkurth@ornl.gov))  
Treasurer: F. Arzu Alpan (Westinghouse Electric Company, 724/722-6134, [alpanfa@westinghouse.com](mailto:alpanfa@westinghouse.com))

### **EXECUTIVE COMMITTEE**

2008 Piero Ravetto (Polit. De Torino, 39011-564-4443, [piero.ravetto@polito.it](mailto:piero.ravetto@polito.it))  
2008 Robert Roy (Ecole Polyt. De Montreal (EPM), 514/340-4262, [robert.roy@polymtl.ca](mailto:robert.roy@polymtl.ca))  
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2009 Jean C. Ragusa (Texas A&M Univ., 979/862-2033, [jean.ragusa@tamu.edu](mailto:jean.ragusa@tamu.edu))  
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2010 Imre Pazsit (Chalmers University of Technology, +46/31 772 30 81, [imrc@chalmers.se](mailto:imrc@chalmers.se))  
2010 Jeremy E. Sweezy (Los Alamos National Laboratory, 505/665-6204, [jsweezy@lanl.gov](mailto:jsweezy@lanl.gov))  
2010 Aaron M. Watson (Knolls Atomic Power Laboratory, 518/395-4347, [waatsam@kapl.gov](mailto:waatsam@kapl.gov))

### **BOARD LIAISON**

Harold McFarlane (INL, 208/533-7106, [harold.mcfarlane@inl.gov](mailto:harold.mcfarlane@inl.gov))

### **CHAIRS OF STANDING DIVISION COMMITTEES**

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PROGRAM: Dmitriy Anistratov (N.C. State Univ. 919/515-4353, [anistratov@ncsu.edu](mailto:anistratov@ncsu.edu)) (Chair)  
Todd Palmer (Oregon State U., 541/737-7064, [palmerts@engr.orst.edu](mailto:palmerts@engr.orst.edu)) (Asst. Chair)  
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<sup>1</sup> **Editor's Message:** This newsletter will be issued twice a year and can be accessed electronically at <http://www.mcd.ans.org/newsletters>. Please send your newsletter items and comments to me, Avneet Sood at Los Alamos National Laboratory, P.O. Box 1663 MS A143, Los Alamos, NM 87545; Tel: (505) 667-2119; email: [sooda@lanl.gov](mailto:sooda@lanl.gov).