

M&C Division

## Mathematics and Computation Division

American Nuclear Society

Winter Meeting

November 17-21, 2002

Richard Sanchez (CEA, Saclay)

Division Chair



*Presented to the ANS Board of Directors  
November 21, 2002*

M&C Division

## Objectives

- Promote the advancement of mathematical and computational methods for solving problems arising in all disciplines encompassed by the Society, with particular emphasis on numerical techniques for efficient computer application.
- Aid in the dissemination, integration, and proper use of computer codes, including preparation of computational benchmarks and development of standards for computing practices.
- Encourage the development of new computer codes and broaden their use.



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## M&C Division

### Officers (4)

Richard Sanchez	Chair
Roger N. Blomquist	Vice Chair/Chair Elect
Piero Ravetto	Secretary
Glenn E. Sjoden	Treasurer

### Executive Committee (11)

2003	Bernadette Kirk	(ORNL)
	Bill Martin	(U. of Michigan)
	Richard Sanchez	(CEA, France)
	Glenn E. Sjoden	(Lt Colonel US Air Force)
2004	Barry Ganapol	(U. of Arizona)
	Nam Zin Cho	(KAIST)
	John Wagner	(ORNL)
	Roger Blomquist	(ANL)
2005	Tom Sutton	(KAPL)
	Cassiano de Oliveira	(Imperial College)
	Madeline Feltus	(DOE)



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## M&C Division

### Standing Committees (8)

Committee	Chair
Benchmark JBC	Barry Ganapol
Finance	Glenn E. Sjoden
Honors & Awards	Paul Turinsky
Membership	Madeline feltus
Nominating	Forrest Brown
Program	Anil Prinja
Publicity	Todd Palmer
Standards	Andy Smetana

### MCD Liaisons

ANS Staff	Sharon Kerrick
ANS Board	Larry Foulke

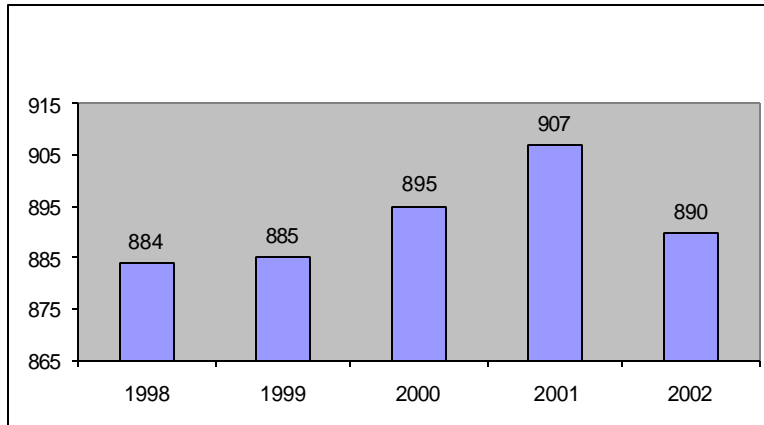


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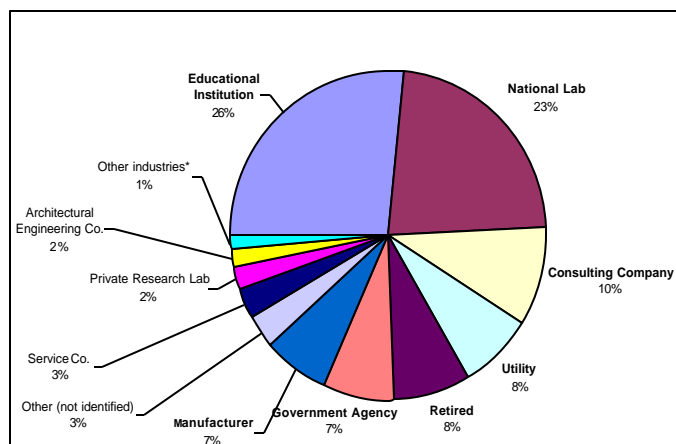
M&C Fall Membership



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M&C Membership by Industry



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### Membership Statistics

	Members	Countries
Africa	1	1
America	808 (22 non U.S.)	6
Asia	32	9
Australia	1	1
Europe	61	18
<b>Total:</b>	<b>904</b>	<b>25</b>

**13% foreign** members : France (16), Japan, Canada (15), England (9), Korea (6),..., Russia (1)

**12.5% student** members

**39.4% RPD** members, **11.7% RPSD** members



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M&C Division

### How to increase membership?

**Dropouts:** Membership Chair to contact individuals to try to get them back

**New members:** Increase student participation

Change bylaws to get students in the committees

Continue to support student participation to ANS national meetings and to M&C Topicals

Continue to support student M&C-related conferences



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**Student Support**

**ANS National and Winter Meetings**

- \$500 for student travel (per meeting)
- \$100 Complimentary tickets to the President's reception for students presenting papers in M&C sponsored sessions

**M&C Topical Meetings (odd years)**

- \$1000 for student travel
- \$250 prize for best student paper

**Student Conferences (every year)**

- \$1000 for student travel
- \$250 prizes for best M&C-related undergraduate and graduate papers (\$125 each)

**Dannels Scholarship Fund**

- \$3000 (2001)
- \$1000 (2002)



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**National Meetings**

<b>Meeting</b>	<b>Regular sessions</b>	<b>Invited sessions</b>	<b>total papers</b>
Boston 1999	2 (12)		12
Long Beach 1999	2 (15)		15
San Diego 2000	2 (11)	1 (4)	15
D.C. 2000	3 (15)	3 (21)	36
Milwaukee 2001	2 (11)	4 (26)	37
Reno 2001	1 (7)	2 (17)	24
Hollywood 2002	2 (12)		12
D.C. 2002	4 (28)		28

**M&C Roundtable** : Current Issues in Computational Methods

M&C typically co-sponsors RPD sessions



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**Topical Meetings**

Meeting	Total papers	Participants	M&C netting
Saratoga 1997	~165 (~35% non U.S.)	~180	~\$6,000
Madrid 1999	214 (115 non U.S.)	279 (25 students)	
Salt Lake 2001	105 (65 non U.S.)	135 (19 students)	&11,212
Gatlinburg 2003	86		

Topicals are the chief source of M&C income

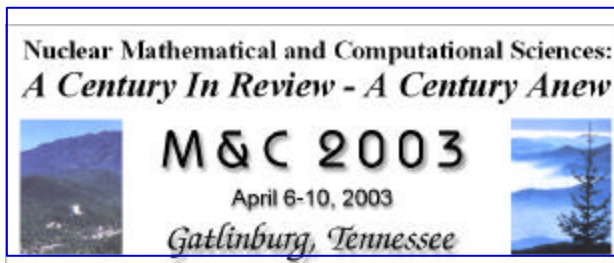
Review of full papers

M&C co-sponsors RPD Topical meetings



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M&C Division



- Special format to celebrate nuclear's first century:
  - A Century in Review: Eight invited lectures on topics of interest to M&C
  - A Century Anew: Regular & Special sessions of invited & contributed papers



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## M&C Division

### Review Lecture Series

- Dedicated to the memory of Ely Gelbard
- Eight one-hour lecture series:
  - Deterministic Methods for the First-Order Transport Equation:  
Ed Larsen (U. Michigan) & Jim Morel(LANL)
  - Deterministic Transport Methods of the Second Order: Elmer Lewis (Northwestern)
  - Monte Carlo Methods: Jerome Spanier (UC at Irvine)
  - Reactor Core Methods: Kord Smith (Studsvik Scandpower)
  - Resonance Theory in Reactor Applications: R. N. Hwang (Argonne National Lab)
  - Reactor Kinetics and Dynamics: Jack Dorning (University of Virginia)
  - The Role of Perturbation Theory in Sensitivity and Uncertainty Analysis:  
Dan Cacuci (Forschungszentrum Karlsruhe, Germany)
  - Criticality Safety Methods: Elliott Whitesides (Oak Ridge National Lab - retired)
- Each half day of sessions will start with a one-hour lecture
  - Followed by 15 min Q&A
  - Followed by 15 break
  - Followed by regular & special sessions



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## M&C Division

### Honors & Awards

Distinguished Service Award (\$500 + \$100 for plaque)

Pomraning Award: new ANS award funded by a \$15,000 gift from SAIC

MCD & RPD Joint Young Researcher Award

Actively proposing candidates to the rank of ANS Fellow

Proposes candidates to other ANS awards



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## M&C Division

### Standards

ANS-10 currently supports 4 Standards in the area of Mathematics and Computations.

The following Standard is currently under maintenance:

**ANS-10.4-1987; R1998, Guidelines for the Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry.** This standard provides criteria for the verification and validation (V&V) of scientific and engineering computer programs developed for use by the nuclear industry.

ANS-10 has two Standards that require maintenance:

**ANS-10.5-1994, Accommodating User Needs in Computer program Development.**

This standard presents criteria for addressing user needs in the preparation and use of computer software for scientific and engineering applications.

**ANS-10.3-1995, Documentation of Computer Software.** This Standard address the documentation of computer software prepared for scientific and engineering applications.

The last Standard ANS-10 supports is **ANS-10.2-2000, Portability of Scientific and Engineering Software** (revision of ANS-10.2-1988). This Standard provides recommended programming practices and requirements to facilitate the portability of computer programs prepared for scientific and engineering computations.



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## M&C Division

### Actions in Progress

**Students:** Increase participation and membership

Students in H&A, Membership, Program and Publicity  
Committees

**Bylaws :** Revise bylaws

Allow students in Committees

Joint Benchmark Committee

Regulation for Topical Meetings

**Website:** Improve

Depository of documents

Library of pedagogical-type programs

Chat session for members

**Program:** Straighten

Participation to ANS meetings (special sessions)

Publicity for Topical Meetings

**Standards:** Straighten

Increase participation



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