

AMERICAN NUCLEAR SOCIETY REACTOR PHYSICS DIVISON Summer 2012 – Summer 2013 Newsletter



http://rpd.ans.org

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Message from the Outgoing Chair

By Alireza Haghighat (<u>haghigha@vt.edu</u>)

It is an honor to serve as Chair of one the best technical divisions of the American Nuclear Society (ANS). It is one of the best, because of you the Reactor Physics Division members who are interested, active, and highly professional.

I would like to thank Ben Forget, my predecessor, for his efforts and excellent leadership of the Division.

In this newsletter, you will read about our activities in the past year, especially the very successful PHYSOR 2012, which was held in Knoxville, TN, on April 15-20, 2012. I would like to congratulate the leadership of the meeting including Jess Gehin, Ivan Maldonado, and Ron Ellis, and committee chairs including Jim Gulliford, Gary Dyck, Trent Primm, Chris Robinson, Katherin Goluoglu, Hanna Shapira, Wendy Ellis, Ugur Mertyurek, Brian Ade, Germina Ilas, Josh Peterson, Dan Ilas, Chris Perfetti, and Lane Carasik.

Also, I would like to thank our outgoing Program Chair, Fausto Franceschini, who has made a lasting mark on the organization and promotion of the activities of the Program Committee. Fausto has agreed to work with our new Program Chair, Alex Stanculescu.

In the past year, we have engaged in a number of activities including: i) initiated enhancement of our Website, ii) planning to the 75th Anniversary of the ANS at 2013 Washington DC meeting, iii) Finalizing the Reactor Physics Division's Bylaws and Rules, and iv) continue our efforts in organizing successful technical sessions and support our Japanese colleagues in organization, conduct and promotion of the PHYSOR 2014 (http://physor2014.org) in Japan, Sept 28-Oct 3, 2014, Kyoto, Japan. Under the leadership of Prof. Akio Yamamoto, Chair of Technical Program Committee, in addition regular sessions, several special sessions and workshops are being organized. You will find further information in this newsletter.

Over the past two years since the Fukushima Daichii accident, I have gone through moments of doubt and concern about the future our industry. However, after reviewing the timeline of the three major accidents, I have developed more trust on the design and safety of our nuclear reactor designs. It appears to me that we need to dedicate more efforts in training and education of reactor operators, engineers and regulators, and nuclear accident mitigation leadership on and management, especially for beyond design-basis accidents (BDBA's), which cannot be anticipated.

Further, we need to engage in education of the public on the nuclear technology, not only on its benefits but also on its risks. We need to develop real-time, high fidelity modeling and simulation tools which can be used for accident mitigation and management. Finally, we need to work on the design of inherently safe reactors which do not require cooling in case of loss of coolant. So, I encourage you to become more engaged as you have an opportunity to make a difference.

My fellow officers and I look forward to working with you to continue our tradition of excellence and service.

Support for the ANS Strategic Plan

By Alireza Haghighat (<u>haghigha@vt.edu</u>)

Traditionally, Reactor Physics Division has had an active membership with excellent track record on organizing highly successful international meetings, and special panels and regular sessions on new topics at the national meetings.

Further, over the last four years Reactor Physics Division has been organizing a roundtable on recent Reactor Physics Division development and issues, and sponsored half-day or full-day training workshops on computer codes and advanced reactor physics computational methodologies. Finally, the Division has embarked on efforts for the enhancement of its Website, and effective use of it for publicity and engagement of members and public.

To this effect, we are in the process of conducting a survey of our membership to learn about their needs and views on both our activities and utilization of the Website.

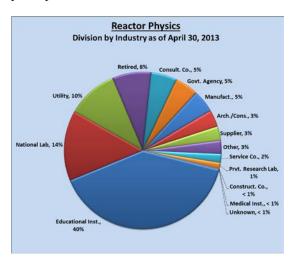
Overview about the Reactor Physics Division

By Pavel Tsvetkov (<u>Tsvetkov@tamu.edu</u>)

The Reactor Physics Division is promoting the advances in the physics of nuclear reactors and other nuclear systems. Our meetings, publications and our website (<u>http://rpd.ans.org</u>) facilitate cutting-edge research efforts, spread results, encourage discussions and engage the community.

The areas of technical interest within the Division are determined by our membership following general nuclear energy trends worldwide. Our activities include nuclear data preparation for use in computational tools, methods for simulations and analysis of particle interactions and transport, reactor and nuclear system analysis, design and design methods, validation and operating experience and standards, as well as relevant cross-cutting efforts.

The Reactor Physics Division is one of the largest and most active professional divisions within the ANS. We are continually growing and our current membership as of April 30 of 2013 is 2,099. The provided chart gives details of the Division Membership. The largest groups are Educational Institutions, National Laboratories and Utilities. Over 600 students have chosen to join and actively participate in the Division.



We are one of the most active professional divisions as demonstrated through excellent national meeting participation, well-organized and attended technical sessions and topical meetings, very active programs such as our standards program, and high profile awards such as Wigner Award.

The Division is the proud sponsor of the Allan F. Henry/Paul A. Greebler Scholarship for students pursing graduate studies in the field of reactor physics. The scholarship provides support for domestic and international students. Recognizing our growth and financial success, we are looking into establishing a second endowed scholarship.

Our biennial topical meetings (PHYSOR) have strong international recognition of their quality and always enjoy tremendous support and attendance. Well-developed technical programs and the excellent organizational abilities of the sponsoring local sections are the foundation for our success.

The Reactor Physics Division provides service to the international reactor physics community. We are governed by elected members of the Executive Committee. The Committee leads the efforts of Program, Scholarship and Awards, and Standards committees. We continue our close collaborations with the Mathematics and Computation Division and other Divisions within the ANS.

All our committees are volunteer-driven. We welcome new members who are interested to

become engaged in our activities. Our continuing success is founded on our active membership. Please, join us. Contact any of the Division's officers or representatives for more information.

Treasurer's Report

By Ron Ellis (<u>ellisrj@ornl.gov</u>)

The Reactor Physics Division is in exceptional financial health and continues to prosper due to growing membership and a series of successful recent Topical Meetings. We predicted ending calendar year 2012 with a balance of \$73,846. Our 2011 membership allocation from ANS Headquarters was \$3,886. Based on growth trends we forecast a 2012 membership allocation of \$3,920. PHYSOR 2012 was held in April 2012. It was a technical and financial success; the fraction of income from the meeting returned to Reactor Physics Division was \$12,306.

Our significant balance will allow Reactor Physics Division to continue to make generous contributions in support of students. We have allocated \$5,200 for 2013: \$2,500 for student conference support (up from \$2,000 for the previous student conference); \$500/national meeting to support student travel; and \$1,700 for the purchase of up to 10 student tickets for the ANS Meeting Opening Reception (doing this in tandem with the Mathematics & Computations Division).

The Reactor Physics Division is meeting its objectives for student support. In fact, because of the significant sustained or growing balance, the Division is looking to develop a second Endowed Scholarship, in addition to the current Henry/Greebler Scholarship. The 2012 recipient of the Henry/Greebler Scholarship is Jonathan Wormald of NCSU. More information on this plan and the scholarships can be obtained from the Reactor Physics Division Scholarship Subcommittee.

Survey Status

By Blair P. Bromley (<u>bromleyb@aecl.ca</u>)

The Reactor Physics Division is conducting an online survey of the Reactor Physics Division membership to get their feedback, opinions, and insights on the Reactor Physics Division sessions organized at the ANS Annual Meetings (Winter and Summer).

The data gathered may be used to adjust our technical program to better suit the needs and interests of our membership, thus promoting greater participation for the meetings and provide an updated strategy that, if successful, could be implemented also by other Divisions. For example, we could consider an alternative session schedule to reduce the number of parallel sessions.

<u>Website</u>

By Mark DeHart (<u>mark.dehart@inl.gov</u>)

The Reactor Physics Division Website is being updated. The website is accessible at http://rpd.ans.org

The Reactor Physics Division Facebook presence has been established. The Facebook group is called "Reactor Physics Division of the American Nuclear Society". We currently have 348 members of the FaceBook group. The Reactor Physics Division members are encouraged to join and participate in the group, with postings and discussion. The group is accessible at https://www.facebook.com/groups/ReactorPhysics/

The LinkedIn site is being created.

Student Support

Student conference allocation has been made. The Reactor Physics Division continues to support student conferences at the levels needed. Excess funds will be used in this context and also in connection to broader student support and potential ways to do so. A student design competition is noted as a possibility.

Recent and Upcoming Meetings

PHYSOR 2012, Knoxville, TN

The ANS Topical Meeting on Advances in Reactor Physics (PHYSOR), was held in Knoxville, TN, from April 15 to 20, at the Knoxville Convention Center. The theme of PHYSOR 2012 was "Linking Research, Industry, and Education." The webpage for PHYSOR 2012 is located at http://physor2012.org.

There were 375 papers accepted for PHYSOR 2012 and presented in the technical program in the technical sessions, poster session, and as panel session presentations. The papers were submitted to 14 topical tracks and two special sessions.

The technical program at PHYSOR 2012 included 65 oral sessions (including two technical panels) organized in five parallel tracks; there was also wine and cheese poster session. There were a total of 491 participants in PHYSOR 2012. Record numbers of domestic and international students were recorded.

The meeting continued the tradition of tremendously successful PHYSOR series. The income to the division is about \$12,306.

2012 Winter Meeting in San Diego, CA

The Division sponsored and co-sponsored 11 sessions:

- 1. Reactor Physics: General
- 2. Reactor Physics: General
- 3. Reactor Physics Design, Validation, and Operating Experience
- 4. Reactor Physics Design, Validation, and Operating Experience
- 5. Reactor Analysis Methods
- 6. Reactor Analysis Methods II
- 7. Hybrid Monte Carlo Deterministic Methods for Reactor Analysis
- 8. "I Wonder if..." Special Session in Honor of John Rowlands
- 9. IAEA Reactor Physics and Technology Development Activities – I
- 10. IAEA Reactor Physics and Technology Development Activities – II
- 11. Physics Issues for Small Compact Reactors

All special sessions made and have good representations of papers and were well attended at the meeting.

2013 ANS Student Conference

ANS student conference was hosted by MIT student section in April 4-6, 2013.

The theme of the conference was "Public Image of the Nuclear Engineer". Conference site: <u>http://meetings.ans.org/student2013</u>.

The Division provided financial support to the conference.

2013 Annual Meeting in Atlanta, GA

The 2013 Annual Meeting in Atlanta, June 16-20, 2013, will be themed as "Next Generation Nuclear Energy: Prospects and Challenges". The Division sponsored and co-sponsored a number of special sessions in addition to the regular general sessions.

The Division sponsored and co-sponsored 13 sessions and one panel on "Current Issues in LWR Core Design and Reactor Engineering Support":

- 1. Reactor Physics Design, Validation, and Operating Experience—I, Mon. p.m. Session Organizer: A. Stanculescu (INL), Chair: S. Monti (IAEA)
- Reactor Physics Design, Validation, and Operating Experience—II, Tues. p.m. Session Organizer: A. Stanculescu (INL) Chair: A. Rineiski (KIT)
- Fuel Cycle Design Optimization and Analysis, Mon. p.m.
 Session Organizer: M. Mahgerefteh (Exelon) Chair: S. Monti (IAEA)
- 4. **Reactor Physics: General—I**, Tues. a.m. Session Organizer: A. Stanculescu (INL) Chair: T. A. Taiwo (ANL)
- Reactor Physics: General—II, Wed. p.m. Session Organizer: A. Stanculescu (INL) Chair: J. C. Gehin (ORNL)
- Advanced Modeling and Simulation in Reactor Physics—I, Tues a.m.
 Session Organizer: U. Mertyurek (ORNL) Chair: Y. Kim (KAIST)
- Advanced Modeling and Simulation in Reactor Physics—II, Tues p.m. Session Organizer: U. Mertyurek (ORNL) Chair: A. Yamamoto (Nagoya Univ)
- 8. **Reactor Analysis Methods-I**, Wed. a.m. Session Organizer: A. Stanculescu (INL) Chair: D. Lee (UNIST)
- 9. **Reactor Analysis Methods-II,** Thu. a.m. Session Organizer: A. Stanculescu (INL) Chair: A. Yamamoto (UNIST)
- 10. **Physics of Fluid-Fuel Systems—I,** Thu, a.m. Session Organizer and Chair: P. Ravetto (Politecnico di Torino-Italy)

- Physics of Fluid-Fuel Systems—II, Thu, p.m. Session Organizer: P. Ravetto (Politecnico di Torino-Italy) Chair: N. Zin Cho (KAIST)
- Student Research in Reactor Physics-I, Wed a.m.
 Session Organizer: M. D. DeHart (INL) Chair: J. D. Bess (Battelle Energy Alliance)
- Student Research in Reactor Physics-II, Wed p.m.
 Session Organizer: M. D. DeHart (INL) Chair: S. Dulla (Politecnico Di Torino)

Current Issues in LWR Core Design and

Reactor Engineering Support–Panel, Mon. p.m. Session Organizer and Chair: M. Mahgerefteh (Exelon)

PANELISTS:

- Steve Baker (TransWare)
- Robb Borland (First Energy)
- Edward B. Gibson (Southern Nuclear)
- Thomas Remick (SCE)
- Joy Forster(Duke Energy)
- James Tusar (Exelon)

2013 Winter Meeting in Washington D.C.

The meeting will celebrate 75th anniversary of ANS. Sessions/panels focused on fission are being organized.

PHYSOR 2014, Sept. 28 – Oct. 3, 2014, Kyoto, Japan

By Akio Yamamoto (a-yamamoto@nucl.nagoya-u.ac.jp)

The next PHYSOR meeting will be held in Kyoto, Japan. The meeting is returning to Japan after 18 years. Kyoto is one of the most historical and beautiful cities in Japan. Conference site: www.physor2014.org

The meeting will follow traditions of previous PHYSOR meetings. The meeting planning and organization is on schedule.

The technical program will meet the high standards of recent PHYSOR meetings (Interlaken 2008, Pittsburgh 2010, and Knoxville 2012), including timely and relevant special topics.

Students will be actively involved in all of the events and activities.

Exciting workshops and technical tours will be also offered.

Important dates:

- January 2014 Submission of Full Papers
- April 2014 Notification of Acceptance
- June 2014 Final Paper Submission

Reactor Physics Standards

By Dimitrios Cockinos (<u>cockinos@bnl.gov</u>)

There are several standards in development including 19.3.4 and standards on physics of startup tests, nuclear data for medical and industrial applications, and 19.5 on requirements for experiments for physics measurements:

- ANS-19.3.4 Determination of the Thermal Energy Deposition Rates in Nuclear Reactors.
- **ANS-19.4** Reference Power Reactor Physics Measurements for Nuclear Analysis Verification.
- **ANS-19.5** Requirements for Reference Reactor Physics Measurements.

Standard on MTC has been finalized. Decay heat power standard has been revised by Ian Gould (ORNL).

Honors & Awards

By Dimitrios Cockinos (<u>cockinos@bnl.gov</u>)

The Reactor Physics Division members are invited to nominate candidates for:

- ANS Fellow Award,
- New Young Engineer award
- Eugene P. Wigner Reactor Physicist Award

2013 Election Results

By Pavel Tsvetkov (<u>Tsvetkov@tamu.edu</u>)

Source: http://www.ans.org/about/election/results/

The following individuals constitute our new Reactor Physics Division Executive Committee leadership team:

- Mark D. DeHart Chair
- Ronald J. Ellis Vice Chair
- Fausto Franceshini Secretary
- Pavel V. Tsvetkov Treasurer

The following individuals have been elected to serve in the Executive Committee:

- Melissa A. Hunter Executive Committee
- Moussa Mahgerefteh Executive Committee
- Bojan Petrovic Executive Committee
- Jaakko I. Leppanen Executive Committee - Non-US

Congratulations!

The most recent meetings of the Reactor Physics Division EC and PC took place on November 11, 2012, during the ANS 2012 Winter Meeting in San Diego, CA.

Thanks to Blair Bromley, photographs were taken of those that attended the Program Meeting and the Executive Meeting. These pictures are presented on the next page.

Tables of the current members of the Reactor Physics Division PC and EC are included at the end of the newsletter.

Executive Committee Meeting Sunday, November 11, 2012, 4-6 p.m., Britany, Town and Country Hotel and Resort, San Diego, CA





Program Committee Meeting Sunday, November 11, 2012, 2-4 p.m., Britany, Town and Country Hotel and Resort, San Diego, CA





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Dr. Ronald J. Ellis		Dr. Pavel V. Tsvetk	ov		
Oak Ridge National Laboratoy		Associate Professor			
Reactor and Nuclear Systems Division		Department of Nuclear Engineering			
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