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A Message from the Chair

By Arzu Alpan

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Greetings, RPD Members!

I am honored and very pleased to serve in RPD as the Chair of the Division. I would like to thank our outgoing Chair, Dr. Fausto Franceschini, for his leadership in RPD and would also like to thank the RPD Executive Committee Members and RPD Standing/Special Committee Chairs and Members for their support.

As we have been promoting our upcoming international topical meeting, PHYSOR 2018, I would like to mention again that PHYSOR 2018 will be held at Cancun, Mexico, April 22-26, 2018. The topical meeting, organized by the Mexican Nuclear Society, has 10 technical tracks, 5 special sessions, and 3 technical workshops. Details are available at the meeting website <http://physor2018.mx>.

One of my goals as the Chair of RPD has been to update the RPD bylaws and rules. A draft revised version of the RPD bylaws and rules was created in 2013, but was not finalized. In order to complete the revision of the RPD bylaws and rules, I formed and chaired an RPD Bylaws and Rules Committee. With the support of this new committee - thanks to Dr. Ronald Ellis, Dr. Sedat Goluoglu, Dr. Luiz Leal, Dr. Moussa Mahgerefteh, Dr. Bojan Petrovic, Dr. Pavel Tsvetkov, and Dr. William Walters - we addressed ANS comments and made updates for the improvement of the RPD bylaws and rules. The revised RPD bylaws and rules will be submitted to the RPD Executive Committee and then to ANS for approval. The approved RPD bylaws and rules will be posted on the RPD website.

RPD continues to support students through financial contributions given to the ANS Student Conference and to their travel to ANS National Meetings and with the Rudi Stamm'ler (undergraduate), Alan F. Henry / Paul A. Greebler (graduate) and Michael J. Lineberry (graduate) scholarships. RPD contributed financially to the 2017 Young Professionals Congress, and recognizes early career members of the RPD with the RPD Early Career Reactor Physicist Award. Also, with this issue of the newsletter, we are posting a student article on reactor physics and welcome future articles from RPD students.

The Eugene P. Wigner Reactor Physicist Award, established by the RPD, honors individuals who have made outstanding contributions to the advancement of the field of reactor physics. Congratulations to Dr. Nam Zin Cho for being the 2017 recipient of the Eugene P. Wigner Reactor Physicist Award!

RPD consists of members all around the world. While the majority of the RPD membership is from the U.S., we have members from 37 countries; non-U.S. membership is given in the pie chart below, on the next page. I would like to thank all of our members for their technical contributions in reactor physics. Please reach out to me if you would like to be actively involved in the technical activities of RPD, such as standards development and organizing technical sessions at meetings, or if you would like to be involved in our governance activities.

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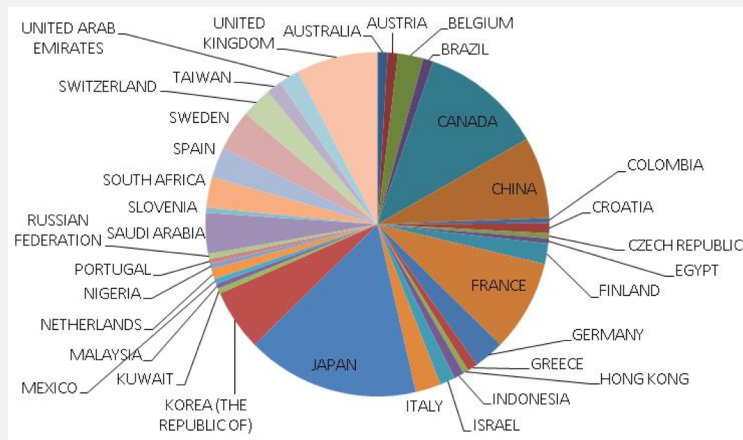
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Please share your ideas and insights on reactor physics topics with us via the ANS Collaborate site <http://www.ans.org/members/collaborate/> and the RPD Facebook Group. If you have any comments or suggestions to improve the activities of our Division, please contact me at alpanfa@westinghouse.com.

Sincerely,

Arzu Alpan, RPD Chair 2017/2018
Westinghouse Electric Company



Non-U.S. RPD Membership

RPD Facebook Page

By Ron Ellis

ellisrj@ornl.gov

The Reactor Physics Division created and administrates a Facebook Group entitled: Reactor Physics Division of the American Nuclear Society. This is a closed group with the goal of encouraged discourse and dialog on news and items of importance and interest to the reactor physics community. We currently have 597 members and encourage RPD members and officials, and others who are interested in reactor physics and nuclear engineering to join and participate. The administrators of our Facebook Group are currently Mark DeHart, Ron Ellis, and Clive Townsend.

RPD Scholarships

By Benoit Forget, RPD Scholarship Committee Chair

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As in the past few years, the reactor physics division is proud to offer two scholarships: 1) the Rudi Stamm'ler undergraduate scholarship (\$2,000), and 2) the Allan Henry / Paul Greebler graduate scholarship (\$3,500). Please encourage all deserving students pursuing research in the field of reactor physics to apply. The application deadline is February 1st, 2018 and application forms can be found at:

<http://www.ans.org/honors/scholarships/forms/>

Honors and Awards

By Dimitros Cokinos, RPD Honors and Awards Committee Chair

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EUGENE P. WIGNER REACTOR PHYSICIST AWARD

We congratulate Professor Emeritus Nam Zin Cho of Korean Advanced Institute of Science and Technology (KAIST) on his selection as winner of the 2017 Eugene P. Wigner Reactor Physicist Award. Dr. Nam Zin Cho's name is internationally known for his outstanding contributions to various areas of Reactor Physics. Professor Cho's "Wigner Lecture" will be delivered during the afternoon session "Reactor Physics General I" on Monday, October 30, 2017. Professor Cho joins an impressive list of past winners of this award including, among others, E.P. Wigner, J. Horowitz, A.M. Weinberg and A.F. Henry.

EARLY CAREER REACTOR PHYSICIST AWARD

This relatively new award was created to honor outstanding young reactor physicists, who at the time of their nomination are 39 years old or younger. This award is presented during the ANS Annual Meeting. This year's award will be announced during the meeting of the Reactor Physics Division's Executive Committee meeting on Sunday, October 29, 2017.

NOMINATIONS WELCOME

The Reactor Physics Division welcomes nominations for the two awards, Wigner and ECRP

Deadlines for nominations are:

Wigner Award	April 1, 2018
ECRP Award	August 1, 2018

RPD Program Committee News

By Cristian Rabiti, RPD Program Committee

Chair

cristian.rabiti@inl.gov



Members

The RPD would like to thank for their service all the Program Committee for the work performed in reviewing papers, promoting special sessions and stimulating paper submission.

We would like to remember that candidature suggestions for the Program Committee, needs to be communicated to the Chair (Cristian Rabiti, cristian.rabiti@inl.gov) at least a month before the next Annual Meeting (Philadelphia, June 17-21, 2018)

2017 ANS Annual Meeting, San Francisco, CA, June 11-15, 2017

The venue of the ANS Annual Meeting was San Francisco, CA. The sessions sponsored by the Reactor Physics Division counted in total for 60 papers. The papers were presented over nine sessions: Reactor Physics: General (three sessions, total 18 papers), Reactor Analysis Methods (two sessions, total 15 papers), Reactor Physics Design, Validation and Operational Experience (one sessions, total 8 papers), Research and Test Reactors (one session, 6 papers), and Recent Advancements in Liquid and Solid Fuel Molten Salt Reactors (two sessions, 13 papers).

Once more we would like to thanks the organizers of the special sessions, Florent Heidet for the session "Research and Test Reactors," and Massimiliano Fratoni for the session "Recent Advancements in Liquid and Solid Fuel Molten Salt Reactors."

RPD Best Paper Award (2017 ANS Annual Meeting)

As usual many excellent papers were submitted, and many excellent presentations were given at the 2017 ANS Annual Meeting. A team of peers reviewed both the papers and the presentations and determined that the paper/presentation: "Monte Carlo/CFD Coupling for Accurate Modeling of the Delayed Neutron Precursors and Compressibility Effects in Molten Salt Reactors," Manuele Aufiero (Univ. California, Berkeley), Pablo Rubiolo (LPSC-IN2P3), Massimiliano Fratoni (Univ. California, Berkeley), published in Transactions of the American Nuclear Society, Volume: 116 (2017): 1183-1186, was particularly good and deserving of this Reactor Physics Division award.

2017 ANS Winter Meeting, Washington, DC, October 29th and November 2nd, 2017

Thanks also to the special session organizers the Annual Meeting has achieved a substantial large number of papers. In total 69 papers will be presented at the conference, while 60 were submitted of which one was retreated.

The detail of the sessions is reported below:

- Reactor Physics General: 20
- Reactor Analysis Methods: 16
- Reactor Physics Design, Validation and Operational Experience: 12

Special sessions:

- Reactor Physics Challenges in Molten Salt Reactor Design (organizer: Massimiliano Fratoni): 9
- U.S. and UK International Collaboration on Nuclear R&D (organizer: Andrew Worrall): 6
- Solutions for Near-Term Deployment of Lead -Cooled Fast Reactor Technology (organizer Stefano Monti): 6

Panel sessions:

- U.S. and UK International Collaboration on Nuclear R&D (organizer: Andrew Worrall)
- Solutions for Near-Term Deployment of Lead -Cooled Fast Reactor Technology
- Reactor Physics Challenges in Current LWRs Fleet (organizer Amanda L. Lang)

2018 ANS Annual Meeting, Philadelphia, PA

The organization of the 2018 ANS Annual meeting is already ongoing. The extended abstract submission is open until January 12, 2018

The committee would like to thank the organizers for the two special sessions:

- "The Nuclear Energy Advance Modeling and Simulation (NEAMS) Workbench" organized by Nicolas E. Stauff
- "Advances in Fast Reactor Designs and Concepts," organized by Florent Heidet

Participation in Program Committee Activities

The Reactor Physics Program Committee, at the coming 2017 winter meeting, will be held Sunday, from 2 pm to 4 pm, in room WASHINGTON 2, at the conference hotel. The meeting is open to anyone interested. It is also important to remind that the RPD Program Committee is the moment to present special session proposals for the next year Winter meeting in Orlando, FL (November 11-15, 2018). Please contact the Program Committee chair (Cristian Rabiti, cristian.rabiti@inl.gov) before or during the meeting to propose a special session. The special session should be submitted using the "Attachment V" which can be printed out from <http://cdn.ans.org/meetings/session/docs/somanual.pdf>

meeting to propose a special session.

ANS RPD Program Committee

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Upcoming Topical Meetings

PHYSOR 2018 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering

April 22 - 26, 2018, Cancun, Mexico

<http://www.physor2018.mx>



Deadline for Full Paper Submission: **October 31, 2017**

Author Notification of Acceptance: **January 15, 2018**

Final paper Submission: **February 28, 2018**

Student Research Highlights

Starting in this issue, the RPD newsletter will publish highlights of student research. Often, our students are working on cutting edge research, and our goal is to provide them with a venue for effective communication of their work across the community.

Achieving passive safety in even large SFR cores through the use of Autonomous Reactivity Control systems

By Christopher T. Keckler

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For decades, designers of fast reactors have struggled to achieve the passive safety characteristics of small cores when scaling up to larger power reactor scales due to the possibility of a strongly positive coolant-density coefficient. To meet this challenge, the Autonomous Reactivity Control (ARC) system has been recently devised to allow for excellent passive safety performance in the case of major protected and unprotected transients in standard assembly-type fast reactors, even when the coolant density reactivity coefficient is positive. The ARC system can be included into any standard linear-assembly fast reactor core with minimal modification to the assemblies, and provides an additional engineered, passive negative reactivity insertion in response to an increase in reactor outlet temperature over nominal conditions. In this way, a strong overall negative feedback can be assured in response to a large variety of transients, even when control rods fail to actuate. The ARC system can be tuned very easily to a multitude of core designs and reactivity requirements, and has been shown through mechanistic simulation to provide a smooth, reliable, and strong mechanism for shutdown during all examined transients in both medium and large SFR cores. Additional studies have shown the potential to use the ARC system as a means for passive load following and method for providing long term reactivity control in compensation of burnup.

Please see full article published on the RPD website.

Reactor Physics Standards

By Dimitros Cokinos, ANS-19 Reactor Physics Standards Chair

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As a result of continuing progress in various ANS-19 standards, there has been increased interest by RPD members to join the committee. This interest is also reflected in the number of attendees at our meetings held during the ANS national meetings.

In the past several months we have seen the release of two newly revised standards, progress in the revision of existing standards and in the rewards for the efforts towards adoption by the International Standards Organization (ISO) of two of our standards. Highlights of the accomplishments over the last few months are presented below.

Standard ANSI/ANS-19.1, "Nuclear Data Sets for Reactor Design Calculations" has been reviewed by the members of ANS-19. This updated standard includes the recent advances in the field of nuclear data. Work has continued on the revision of ANSI/ANS-19.3, "Steady State Neutronics for the Analysis of Power Reactors" and a new Working Group with a new chair has been formed to initiate the revision of ANSI/ANS-19.3.4, "Determination of Thermal Energy Deposition Rates in Nuclear Reactors". As mentioned in a previous report, a new revision of standard ANSI/ANS-19.4, "A Guide for Acquisition and Documentation of Reference Power Reactor Physics Measurements for Nuclear Analysis Verification" has been completed. This standard provides guidance for the analyst in the verification of methodologies used in power reactor simulation codes. The revision of ANSI/ANS-19.6.1, "Reload Startup Physics Tests for PWRs", a widely used standard both in this country and abroad, continued. The newly revised national standard, ANSI/ANS-19.11, "Calculation and Measurement of the Moderator Temperature Coefficient of Reactivity for Pressurized Water reactors has been published and released. Two of our ANSI/ANS national standards, ANSI/ANS-19.3 and ANSI/ANS-19.6.1 are being reviewed by ISO to become international standards. They will be designated as ISO-18075 and ISO-18077, respectively.

Two RPD Members become first de Boisblanc distinguished postdoctoral fellows

By Anna Erickson, RPD Secretary

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Idaho National Laboratory announced the first recipients of the newly created prestigious postdoctoral fellowship. Dr. Thomas V. Holschuh II, a graduate of Oregon State University, will work at INL's Transient Reactor Test Facility (TREAT). Abdalla Abou Jaoude, who will graduate in fall 2017 from Georgia Institute of Technology, will join on the design and evaluation of a mixed-spectrum molten chloride test reactor.

Source: <https://www.inl.gov/article/inl-welcomes-first-deslonde-de-boisblanc-distinguished-postdoctoral-appointees/>

Treasurer's Report

By Florent Heidet

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Reactor Physics Division Treasurer, 2017-2018

The 2017 RPD financials were received from ANS in August 2017, providing the 2nd quarter financials of 2017. It is estimated that the RPD 2017 year-end fund balance will be \$45,671. As expected, this is lower than at the end of 2016 because the main RPD revenue stream are the PHYSOR conferences, which are organized every other year.

The major RPD expenses in 2017 consisted of the following:

- Student support: \$2,500 was given to the 2017 ANS Student Conference and \$1,000 was given to the ANS Student Program for assistance to students to attend the 2017 ANS Annual and 2017 ANS Winter Meetings)
- Rudi Stamm'ler Reactor Physics Division Scholarship: a contribution of \$6,000 was provided in 2017 (and \$3,000 was paid out), bringing the balance to about \$41,000.
- ANS Young Professional Congress: \$1,000 was given in support to the 2017 ANS Young Professional Congress organized as part of the 2017 ANS Winter Meeting.

A draft budget for 2018 was prepared and approved by the RPD Executive Committee. It forecasts that the Division will receive approximately \$3800 from ANS national in the form of membership dues, and at least \$25,000 from the organization of the 2018 PHYSOR conference. The draft budget contains the following allocations:

- \$3,500 in student support
- \$6000 for the Stamm'er RPD Scholarship
- \$100 in plaques for award winners
- \$1000 for YMG support

RPD continues to have excellent financial health due to its membership and to the successful organization of the PHYSOR conferences.

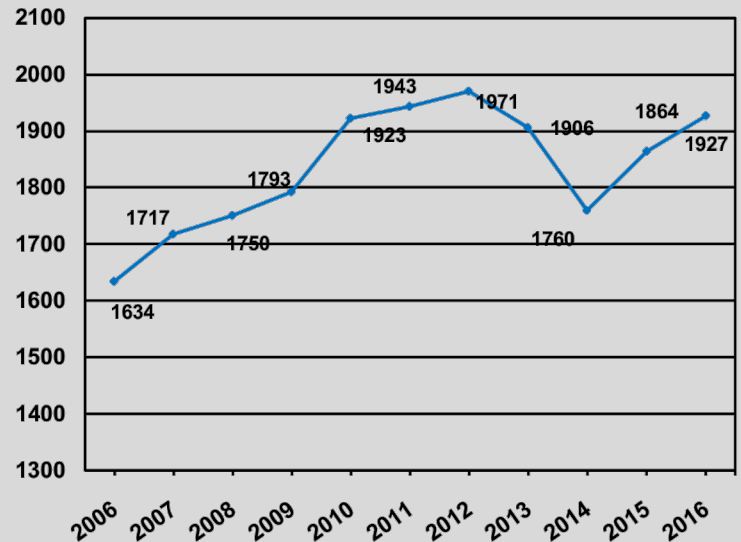
Membership

By Florent Heidet

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Numbers for the RPD membership are only provided once a year and are reported in the Spring newsletter. As a reminder from the last newsletter, the RPD membership has been increasing in 2016 (see figure below) and includes 18.2% of all ANS members.

Reactor Physics Division Annual Membership



American Nuclear Society Reactor Physics Division

October, 2017

Reactor Physics Division Newsletter

Anna Erickson, RPD Secretary

RPD website: <http://rpd.ans.org/>