

# **ANS Reactor Physics Division**

A newsletter of the ANS Rector Physics Division

SPRING ISSUE
June 2017

## Your RPD Leadership Team – 2016/2017

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Florent Heidet – Secretary <a href="mailto:fheidet@anl.gov">fheidet@anl.gov</a>

Pavel Tsvetkov – Immediate Past Chair tsvetkov@tamu.edu

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(Terms Expiring June 2017)

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## A Message from the Chair

By Fausto Franceschini francef@westinghouse.com

Dear RPD colleagues and friends,

This letter provides you an overview of the current status of the division, key activities and initiatives, including the highlights from our meetings and upcoming events.



Let me first congratulate the incoming Chair of the Division, Arzu Alpan. I have known Arzu for years and I am very glad to pass her the baton. She will do an excellent job, also thanks to the experience she has matured in her past positions as officer of the ANS where she has shown a great deal of dedication to our Society. I would also like to congratulate Todd Palmer, as the incoming vice-chair of the Division, and Florent Heidet, as the incoming Treasurer. Florent deserves a special mention also as the winner of the first Early Career Reactor Physicist award; besides being highly talented and motivated, Florent has shown leadership and dedication in taking up several duties for the Society, such as representing RPD in gathering and selecting candidate ideas for President Klein's Nuclear Grand Challenges initiative. Finally, I welcome Anna Erickson's election as the new RPD secretary.

As you know, the Nuclear Grand Challenges project is ANS President Klein's initiative, with the ultimate goal of collecting from our membership, selecting and then actively promoting (with the U.S. Congress, federal agencies, nuclear industries, national laboratories, academia, international audiences, and at ANS conferences) key challenges that once unlocked will enable nuclear energy to thrive again. After vetting many proposed challenges from their constituency, each ANS Professional Division has selected one to three Division Grand Challenges. A committee including all division chairs and the ANS Board of Directors identified nine ANS Nuclear Grand Challenges that will be announced at the ANS Annual Meeting on June 12, 2017, in San Francisco, Calif. Check the ANS Nuclear Grand Challenge page after 12:00 p.m. (Central Time) on June 12 to see the final ANS Nuclear Grand Challenges: http://www.ans.org/challenges/.

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I also invite you to check out our newly designed website at http://rpd.ans.org/ (kudos to Arzu Alpan and Clive Townsend, our new webmaster). together with the Challenges that RPD downselected from our membership's input: to "Develop and generalize the use of advanced modeling & simulation methods and tools useful to the entire community" (challenge #1), to "Develop a clear strategy, based on technical considerations, regarding management of nuclear used fuel (and other nuclear wastes)" (challenge #2), and "Overcoming the barriers preventing deployment of advanced nuclear reactors and their associated fuel cycle in the near future,

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as well as allowing for improving advanced reactor technologies in the longer term" (challenge #3). These and other top-ranking RPD challenges can be seen at <a href="http://rpd.ans.org/rpd-nuclear-grand-challenges/">http://rpd.ans.org/rpd-nuclear-grand-challenges/</a>.

RPD continues to be in excellent financial health, with a budget in excess of \$40K, and two funded scholarships, the Rudi J.J. Stamm'ler undergraduate reactor physics scholarship, awarded to Gavin Ridley of the University of Tennessee, and the Allan Henry / Paul Greebler graduate reactor physics scholarship, awarded to Jesse Jones of North Carolina State University. Thanks to Ben Forget for leading the nominating committee in charge of assigning these scholarships. Please keep in mind these opportunities and encourage deserving students to apply for the upcoming years.

A key reason for RPD's financial health is the significant income provided by highly successful topical meetings. Please keep in mind that full paper submission for the next Physor, PHYSOR 2018: Reactor Physics Paving The Way Towards More Efficient Systems, is about to start, on June 18, with a deadline of Sept. 30 2017. The conference is organized by the Mexican Nuclear Society and will be held in Cancun from April 22 to 26, 2018.

Please check the conference website for paper submission and updated details about the conference. <a href="http://www.physor2018.mx/">http://www.physor2018.mx/</a>.

Beside the Early Career Reactor Physicist awarded to Florent Heidet, I wish to congratulate the recipients of the Wigner awards, Mark Williams and Luiz Leal, for their outstanding work on cross-sections. The current and past recipients of the award can be seen at <a href="http://rpd.ans.org/honors-awards/">http://rpd.ans.org/honors-awards/</a>.

As my appointment as Chair of the Division comes to an end, I wish to express my gratitude for the opportunity of serving RPD for all these years, first as Chair of the Technical Program Committee, and then as an Officer of the Division. This has been a major step in my career development, and an experience that I enjoyed thoroughly. I am grateful to the people that made it happen, to my mentors (Bojan Petrovic, Jess Gehin, Ivan Maldonado and Jeff Bradfute, to quote a few) and to my company that supported me in this important commitment.

See you in San Francisco!

Fausto Franceschini, RPD Chair 2016/2017

# 2016 ANS Winter Meeting - Executive Committee Meeting



# RPD Program Committee News

By Cristian Rabiti

cristian.rabiti@inl.gov



#### Committee Members

The RPD would like to thank for their service the outgoing members of the Program Committee: Wei Ji, Takanori Kitada, Piero Ravetto, A. C. (Skip) Kahler, Scott Palmtag, Eugene Shwageraus, Liangzhi Cao, Mathieu Hursin, Won Sik Yang, Andrew M. Casella, Jeremy Conlin, Florent Heidet, Bo Feng, Nicolas Stauff, and Alberto Talamo.

The new members of the Program Committee will be presented at the coming ANS annual meeting in San Francisco June 11-15, 2017.

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*

Thanks also to the special session organizers the Annual Meeting has achieved a substantial large number of papers. In total 60 papers will be presented at the conference, while 63 were submitted of which two were retreated and one rejected. The detail of the sessions is reported below:

- Reactor Physics: General: 18 papers
- · Reactor Analysis Methods: 15 papers
- Reactor Physics Design, Validation and Operational Experience: 8 papers

#### Special Session:

Regular Sessions:

- · Research and Test Reactors (Organizer: Florent Heidet): 6 papers
- Recent Advancements in Liquid and Solid Fuel Molten Salt Reactors (Organizer: Massimiliano Fratoni): 13 papers

# 2016 ANS Winter Meeting, Las Vegas, NV *November 6-10, 2016*

The venue of the ANS winter Meeting was Las Vegas NV. The sessions sponsored by the Reactor Physics Division counted in total for 86 papers. The papers were presented over fourteen sessions: Reactor Physics: General (six sessions, total 37 papers), Reactor Analysis Methods (four sessions, total 22 papers), Fast Reactors (one sessions, total 8 papers), Reactor Physics Design, Validation and Operational Experience (two sessions, total 11 papers), and TREAT (one sessions, total 8 papers).

Once more we would like to thanks the organizers of the special sessions, Florent Heidet for the session "Fast Reactors," and Javier Ortensi for the session on the "TRFAT"

# RPD Best Paper Award (2016 ANS Winter Meeting)

As usual many excellent papers were submitted, and many excellent presentations were given at the 2016 ANS Winter Meeting. A team of peers reviewed both the papers and the presentations and determined that the paper/presentation: "Spatially Continuous Depletion Algorithm for Monte Carlo Simulations," by Ellis, Matthew S., Josey, Colin, Forget, Benoit, Smith, Kord (MIT) published in Transactions of the American Nuclear Society, Vol. 115.1 (2016): 1221-1224, was particularly good and deserving of this Reactor Physics Division award. Congratulations to the recipients!

# 2017 ANS Winter Meeting, Washington, DC October 29-November 2, 2017

The organization of the 2017 ANS Winter meeting is already ongoing. The extended abstract submission is open until June 7, 2017. The committee would like to thanks the organizers for the two special sessions and two panel sessions:

- "Reactor Physics Challenges in Molten Salt Reactor Design" organized by Massimiliano Fratoni;
- "U.S. and UK International Collaboration on Nuclear R&D: Highlighting Progress during the First Year of a New International Agreement" organized by Andrew Worrall, and co-sponsored by FCWMD;
- "Reactor Physics Challenges in Molten Salt Reactor Design" panel session organized by Massimiliano Fratoni;
- "Reactor Physics Challenges in Current LWRs Fleet" panel session organized by Amanda Lee Lang.

### Participation in Program Committee Activities

The Reactor Physics Program Committee, at the coming 2017 annual meeting, will be held Sunday, from 2 pm to 4 pm, in room Seacliff A 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 Annual meeting in Philadelphia, DC (October 29-November 2, 2017). 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 request form can be downloaded from the RPD website.

# ANS RPD Program Committee

#### Chair

Cristian Rabiti

Idaho National Laboratory

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| 2016   | 5/2019  |
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# A Word from the Past Chair and Nominating Committee Chair

# By Pavel Tsvetkov tsvetkov@tamu.edu

My dear RPD colleagues, friends,

The nominating committee developed the 2017 elections ballot based on nominations and selfnominations from industry, national laboratories



and academia. The ballot includes both national and international representation. I have to say that our pool of candidates for division officers and executive committee members consists of outstanding RPD members who are very energized to work on behalf of the division membership. The election process is the opportunity to engage and contribute this positive energy. The process is very competitive. I hope those, who run for the positions in this cycle but did not succeed, will stay engaged and will consider running in the next cycle. The division needs our energy and excitement.

I am thrilled to report that the election process has successfully been concluded and we have our new incoming leadership and executive committee members. The division ranks are fully filled with the established succession sequences for the next year. Out of 8,149 eligible voters, there was a total of 2,221 ballots cast, yielding a participation rate of 27.25%.

Upon conclusion of 2017 summer meeting, Dr. Arzu Alpan (Westinghouse Electric Company) will be stepping into her role as RPD Chair, Dr. Todd Palmer (Oregon state University) will be assuming the role of Vice Chair, and Dr. Florent Heidet (Argonne National Laboratory) will become our division treasurer. Dr. Anna Erickson (Georgia Tech) will be our new PRD secretary.

Terms of our four executive committee members will be expiring in 2017 and four new members have been elected to fill those open positions. We welcome our newly elected executive committee members – Sedat Goluoglu (University of Florida), Matthew Jessee (ORNL), Javier Ortensi (INL) and William Walters (Pennsylvania State University).

Welcome!

Pavel Tsvetkov, Immediate Past RPD Chair and Nominating Committee Chair, 2016/2017

### **Honors and Awards**

**By Dimitros Cokinos** 

cokinos@bnl.gov

#### **Early Career Reactor Physicist Award**

The winner of the first ECRP Award is Florent Heidet of Argonne National Laboratory. This newly established Reactor Physics award is given to a member of the Division who has done outstanding original work in reactor physics and who, at the time of nomination is 39 years old or younger.

Florent has distinguished himself for significant contributions to, and research in, the field of fast reactor physics, in particular with respect to the long-life breed-and-burn fast reactor concept.

Florent will receive his award during the Monday afternoon, June 12,2017, RPD technical Session, "Reactor Physics General, Part I, to be held during the ANS 2017 Annual meeting in San Francisco, at the Hyatt Regency Hotel in Pacific Concourse G at 3:00 p.m. when he will present the first ECRP Lecture entitled "The Neutron Chase: Taking Advantage of Every Neutron".

#### **Eugene P. Wigner Reactor Physicist Award**

The 2016 Eugene P. Wigner Reactor Physicist Award went to two distinguished nuclear scientists, members of the U.S. reactor physics community, Luis Leal and Mark Williams, both of Oak Ridge National Laboratory for their pioneering work over the past decades in the field of neutron cross sections.

#### NOMINATIONS DEADLINES

Eugene P. Wigner Reactor Physicist Award

April 1st, 2018

· Early Career Reactor Physicist Award

August 1st, 2017

Dimitrios Cokinos, RPD Honors and Awards Committee Chair

# ANS Reactor Physics Division

2017 Election Results



Arzu Alpan Chair Principal Engineer, Radiation Engineering & Analysis Group, Westinghouse Electric Company



Todd S. Palmer
Vice Chair
Professor, School of Nuclear Science and
Engineering, Oregon State University



Florent Heidet Treasurer Principal Nuclear Engineer, Argonne National Laboratory, Argonne, IL



Anna S. Erickson
Secretary
Assistant Professor, Nuclear and Radiological
Engineering, Georgia Tech



Sedat Goluoglu
Executive Committee
Professor, Nuclear Engineering Program,
University of Florida



Matthew A. Jessee
Executive Committee
Deputy Manager, SCALE Code System;
Research and Development Staff, Reactor
Physics Group, Oak Ridge National
Laboratory



Javier Ortensi
Executive Committee
R&D Scientist, Idaho National Laboratory



William J. Walters
Executive Committee
Assistant Professor of Nuclear Engineering,
Pennsylvania State University

## Reactor Physics Standards

#### By Dimitros Cokinos

#### cokinos@bnl.gov

Reviews, revisions and reaffirmations of reactor physics standards constituted the main activities of the ANS-19 members during the last several months.

The revised ANS-19.1, "Nuclear Data Sets for Reactor Design Calculations" is now under review by the members of ANS-19. This updated standard includes the recent advances in the field of nuclear data. As mentioned in a previous RPD Newsletter this standard will form the basis for the creation of an ISO standard on Nuclear Data.

Two standards are being revised under newly reconstituted working groups. They are, ANS-19.3, "Steady State Neutronics for the Analysis of Power Reactors" and ANS-19.3.4, "Determination of Thermal Energy Deposition in Nuclear Reactors".

The newly revised standard ANSI/ANS-19.4, "A Guide for Acquisition and Documentation of Reference Power Reactor Physics Measurements for Nuclear Analysis Verification", has been approved and published as a National American Standard. The purpose of this standard is to enable the analyst to verify the methodology used in power reactor simulations codes. Preparations are underway for the future revision of ANSI/ANS-19.6.1, "Reload Startup Physics Tests for PWRs", a widely used standard among nuclear utilities. Use of the current version, still valid, is being monitored. Its working group is regularly answering questions by users on the performance of specific tests in the standard.

The revision of ANSI/ANS-19.11 "Calculation and Measurement of the Moderator Temperature Coefficient for Pressurized Water Reactors", has just been completed and the standard is on its way to publication as an American National Standard.

Dimitrios Cokinos, RPD Honors and Awards Committee Chair ANS-19, Standards for Reactor Design

## **RPD Scholarships**

#### By Benoit Forget

#### bforget@mit.edu

The reactor physics division is proud to announce the winners of our sponsored undergraduate and graduate scholarships. The Rudi J.J. Stamm'ler undergraduate reactor physics scholarship was awarded to Gavin Ridley of the University of Tennessee, and the Allan Henry / Paul Greebler graduate reactor physics scholarship was given to Jesse Jones of North Carolina State University.

Please join me in congratulating both Gavin and Jesse, and please encourage undergraduate and graduate students to apply for the reactor physics scholarships in the upcoming year.

Benoit Forget, RPD Scholarships Committee Chair

## **RPD** Website

#### By Arzu Alpan

alpanfa@westinghouse.com

The RPD website has a new look and updates and additions implemented with the hard work of Clive Townsend, who has volunteered to become the RPD webmaster. Please visit http://rpd.ans.org/ to view our new website. A few highlights are:

- RPD Facebook page link
- Physor 2018 website link
- RPD input to the ANS Nuclear Grand Challenges
- Update of RPD Honors and Awards recipients
- Update of RPD committee meetings
- Update of RPD newsletters

Please contact us if you have any suggestions on the RPD website.

Arzu Alpan, RPD Vice-chair 2016/2017

## Treasurer's Report

#### By Todd Palmer

#### palmerts@ne.orst.edu

The latest RPD financials were received from ANS in April 2017, providing the 1st quarter financials of 2017. Based on this information and the anticipated expenses in the remainder of 2016, it is estimated that the RPD 2017 year-end fund balance will be \$44815. Our membership allocation was \$90 more than we budgeted, and we haven't yet disbursed any funds for the newsletter (\$250) or other expenses (\$80 – likely for plaques/awards).

The major RPD expenses for 2017 include:

- Student support (\$2,500 was given to the 2017 ANS Student Conference and \$1,000 has been disbursed on May 4, 2017 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 (\$6,000 was disbursed from our budget on May 4, 2017. On November 10, 2016 the balance in the fund was \$36,901. Our goal is \$60,000.)

As 2017 is an "in-between" year for RPD topical meetings, our income will only be from membership allocation.

Todd Palmer, RPD Treasurer 2016/2017

## Membership

#### By Todd Palmer

#### palmerts@ne.orst.edu

The RPD membership from 2005 through December 31, 2016 is given in Figure 1. The RPD membership shows an increase annually from 2005 through 2012, a slight decrease of 3% in 2013, and a larger decrease of 8% in 2014. The decrease in the RPD membership in 2013 and 2014 is mainly attributed to the decrease in the overall ANS membership. Note that even though the number of ANS members in 2014 and 2015 is comparable, the RPD membership increased 6% in 2015, compared to 2014, and increased again in 2016 by just over 3%. In 2016, RPD members were 17.8% of the overall membership of ANS; in 2016, we were 18.2%. Figure 2 gives the RPD 2016 membership allocation by industry; the majority of our members are students (20%), followed by recent graduates (16%) and members from educational institutions (14%).

Todd Palmer, RPD Treasurer 2016/2017

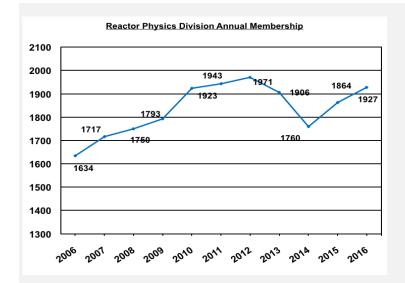


Figure 1. The RPD Annual Membership (December 31, 2016)

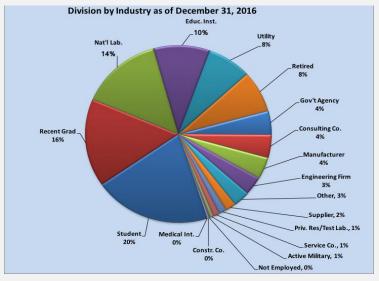


Figure 2. The RPD 2016 Membership Allocation by Industry



June, 2017 Reactor Physics Division Newsletter

Florent Heidet, RPD Secretary 2016/2017

RPD website: <a href="http://rpd.ans.org/">http://rpd.ans.org/</a>