



Your RPD Leadership Team

Officers

Arzu Alpan – Chair
alpanfa@westinghouse.com

Todd Palmer – Vice Chair
palmerts@ne.orst.edu

Florent Heidet – Treasurer
fheidet@anl.gov

Anna Erickson – Secretary
erickson@gatech.edu

Fausto Franceschini – Immediate Past Chair
francef@westinghouse.com

Executive Committee

(Terms Expiring June 2018)

Massimiliano Fratoni
maxfratoni@berkeley.edu

Tomasz Kozlowski
tk@illinois.edu

Stefano Monti
s.monti@iaea.org

(Terms Expiring June 2019)

Andrew Worrall
worralla@ornl.gov

Gilles Youinou
gilles.youinou@inl.gov

Luiz Leal
luiz.leal@irsn.fr

Juan Luis Francois
juan.luis.francois@gmail.com

(Terms Expiring June 2020)

Sedat Goluoglu
goluoğlu@mse.ufl.edu

Matthew A. Jessee
jesseema@ornl.gov

Javier Ortensi
javier.ortensi@inl.gov

William J. Walters
wwalters@psu.edu

A Message from the Chair

By Arzu Alpan

alpanfa@westinghouse.com



Greetings, RPD Members!

As I approach the end of my term as the Chair of the RPD, I would like to highlight our activities and accomplishments this past year. Our topical meeting, PHYSOR 2018 (<http://physor2018.mx>), that was held in Cancun, Mexico, was very successful with more than 300 attendees from 37 countries. I would like to thank the organizing committee, technical committee, and all of my colleagues who have contributed to the meeting.

An RPD bylaws and rules committee was formed in July 2017; members of this committee revised the RPD bylaws and rules, which were then submitted to the RPD Executive Committee for their review and comments. The revised RPD bylaws and rules have been approved by the RPD Executive Committee and submitted to ANS for approval. A couple of important changes that were proposed were the addition of a Student Executive Committee Member and re-structuring of the RPD committees for better functionality. We expect to receive review comments from ANS in July 2018.

Another new RPD committee was formed at the 2017 ANS Winter Meeting to create a guidelines document for the PHYSOR conferences bidding process. I appreciate the efforts of the committee members **Florent Heidet**, **Hany Abdel-Khalik**, **Juan Luis Francois**, **Amanda Lang**, **Luiz Leal**, and **Pavel Tsvetkov**. The document for the PHYSOR conferences bidding process has been created, reviewed and approved, and is available on our website: <http://rpd.ans.org/physor-guidelines/>.

ANS and Discovery Education have partnered to create a national curriculum and curricular materials for middle schools on nuclear science with a focus on nuclear energy. The plan is to introduce the curriculum and curricular materials for the 2018/2019 school year. ANS requested that one person be selected from each Division who would perform a technical review of the content generated by Discovery Education, if called upon. I would like to thank **William Walters**, who has volunteered to be the RPD representative for this task.

RPD continued to recognize professionals and students through various awards. Congratulations to **Benjamin S. Collins** and **Massimiliano Fratoni** (Early Career Reactor Physicist Award), **Abdalla Abou-Jaoude** and **Anna**

Erickson (RPD best paper award; 2017 ANS Winter Meeting), **Grace Kim** (Rudy Stamm'ler Undergraduate Reactor Physics Division Scholarship), **Nina C. Sorrell** (Alan F. Henry/Paul A. Greebler Graduate Scholarship), **Carly J. Romnes** (Michael J. Lineberry Memorial Graduate Scholarship), **Brianna Kaufmann** (2018 ANS Student Conference graduate student best presentation award), and **Alexander Swenson** (2018 ANS Student Conference undergraduate student best presentation award).

Finally, I would like to thank **Todd Palmer** (Vice Chair), **Florent Heidet** (Treasurer), **Anna Erickson** (Secretary), **Cristian Rabiti** (Program Chair), **Pavel Tsvetkov** (Program Chair Alternate), **Dimitrios Cokinos** (Standards and

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Honors & Awards Chair), **Benoit Forget** (Scholarship Chair), and **Clive Townsend** (Webmaster) for their support. It was truly a pleasure and honor serving as the RPD Chair. I look forward to our continued global collaborations and successes!

Sincerely,

Arzu Alpan, RPD Chair 2017/2018

Westinghouse Electric Company

Reactor Physics Standards

By **Dimitrios Cokinos, ANS-19 Reactor Physics Standards Chair**

cokinos@bnl.gov

There has been continued progress in several areas of ANS-19, Reactor Physics Standards.

As reported in our previous Newsletter, most of the activities of the ANS-19 Subcommittee have been focused on revising standards issued in the past five years. These ongoing activities are part of the viability of standards. The lifetime of a standard is five years from its first publication or from its last revision. For the members of the ANS-19 Working Groups, revisions constitute a continuous effort.

The American national standard ANSI/ANS-19.1, "Nuclear Data Sets for Reactor Design" is now ready for balloting by the ANS-19 voting members. The revision of Standard ANSI/ANS-19.3 "Steady State Neutronics for the Analysis of Power Reactors", is continuing with no major changes anticipated. Work on the revision of ANSI/ANS-19.3.4, "The Determination of Thermal Energy Deposition Rates in Nuclear Reactors", has begun under a newly reconstituted Working Group and a new chair. The recently completed and approved ANSI/ANS-19.11, "Calculation and Measurement of the Moderator Temperature Coefficient of Reactivity for Pressurized Water Reactors", is now available for sale from the ANS store. The revision of the widely used ANSI/ANS-5.1, "Decay Heat Power in Light Water Reactors", nears completion with a few refinements included in the updated version.

It should be pointed out that standards constitute a good source of revenue for the Society.

Three of our Reactor Physics standards have been adopted by the International Standards Organization (ISO) and became international standards and a fourth standard is being readied for adoption. The three adopted standards, ANSI/ANS-19.3, ANSI/ANS-19.6.1, "Reload Startup Physics Tests for PWRs", and ANSI/ANS-19.10, "Methods for Determining Neutron Fluence in BWR and PWR Pressure Vessel and Reactor Internals". Their international designation is ISO-18075, ISO-18077 and ISO-19226, respectively. The fourth standard is our ANSI/ANS-5.1, "Decay Heat Power in Light Water Reactors".

RPD Scholarships

By **Benoit Forget, RPD Scholarship Committee Chair**

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 Grace Kim of the United States Naval Academy, and the Allan Henry / Paul Greebler graduate reactor physics scholarship was given to Nina Sorrell of North Carolina State University.

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

Honors and Awards

By **Dimitrios Cokinos, RPD Honors and Awards Committee Chair**

cokinos@bnl.gov

EUGENE P. WIGNER REACTOR PHYSICIST AWARD

Members of the Reactor Physics Division are invited to nominate qualified candidates for the Eugene P. Wigner Award. This prestigious award was founded in 1990 to honor individuals who have made outstanding contributions to the advancement of the field of reactor physics. This award is presented to the winner during the ANS Winter meeting. A complete description of the requirements for the nomination, including a list of past winners, can be found in the ANS website under the heading of Honors & Awards.

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 winners of the ECRP award are Benjamin Collins (ORNL) and Massimiliano Fratoni (UC Berkeley).

NOMINATIONS WELCOME

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

Deadlines for nominations are:

Wigner Award April 1, 2019

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 the outgoing members for their engagement in RPD activities: Andrea Alfonsi (INL), Mohamed Abdelhalim ElSawi (KUSTAR), Alexander Stanculescu (INL), Stephanie Kempf (Bechtel Marine Propulsion Corporation), Liangzhi Cao (Xi'an Jiaotong University), Benjamin S Collins (ORNL), Germina Ilas (ORNL), Nicholas R. Brown (PENN State).

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 of the program committee (Pavel Tsvetkov tsvetkov@tamu.edu) at least a month before the next Annual Meeting (Minneapolis, MN, June 9-13, 2019, 2019)

2018 ANS Annual Meeting, Philadelphia, PA, June 17-21, 2018

The venue of the current ANS annual Meeting is Philadelphia, PA. A good number of papers will be presented at the conference.

The total number of 47 papers will be presented as follows:

Regular sessions:

- Reactor Physics: General, 15 papers
- Reactor Analysis Methods, 15 papers
- Reactor Physics Design, Validation and Operational Experience, 5 papers

We would like also to thank the organizers of the special sessions:

- The Nuclear Energy Advance Modeling and Simulation (NEAMS) Workbench, 12 papers. Organized by Nicolas E. Stauff (ANL), Bradley T. Rearden (ORNL)

Panel sessions will be also held, and we would like to thank the organizers

- Advances in Fast Reactor Design and Concepts–Panel, organized by Florent Heidet

RPD Best Paper Award (2017 ANS Winter Meeting)

As usual many excellent papers were submitted, and many excellent presentations were given at the 2017 ANS Winter Meeting. A team of peers

reviewed the papers and determined that the paper: “Analysis of Power Peaking Phenomena in Mixed-Spectrum Reactors,” Abdalla Abou-Jaoude, Anna Erickson (Georgia Institute of Technology)”, was particularly good and deserving of this Reactor Physics Division award.

Congratulations to the recipients!

2018 ANS Winter Meeting, Orlando, FL, November 11-15, 2018

The organization of the 2018 ANS winter meeting is already ongoing. The committee would like to thank the organizers for the four special sessions:

Data Analytics in Support of Safety and Security, Hany Abel Kalik

Reactor Physics in Test and Research Reactors, Zeyun Wu

Application and Challenges in CFD-Neutronics Coupling, Manuele Aufiero

Current Issues in LWR Core Design and Reactor Engineering Support (Panel), Dr. Moussa Mahgerefteh.

Participation in Program Committee Activities

The Reactor Physics Program Committee, at the coming 2018 winter meeting, will be held Sunday, from 2 pm to 4 pm, in room Franklin 8. 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 Minneapolis, MN (June 9-13, 2019). Please contact the Program Committee chair (Cristian Rabiti, cristian.rabiti@inl.gov,

RPD 2018 Election Results

Congratulations to the newly elected officers and members of RPD's Executive Committee!

Todd Palmer - Chair

Florent Heidet - Vice Chair

Germina Ilas - Secretary

Anna Erickson- Treasurer

Nicholas Brown - Executive Committee

Stephanie Kempf - Executive Committee

David Kropaczek - Executive Committee

Zach McDaniel – Executive Committee

The terms of our new officers and members will be effective June 21, 2018, after the 2017 ANS Annual Meeting.

ANS RPD Program Committee

Chair

Cristian Rabiti

Idaho National Laboratory

2525 Fremont Avelidaho Falls, ID 83415-6108

Phone: 1 208 526 6821; Email: cristian.rabiti@inl.gov

Program Chair Alternate: Pavel Tsvetkov (tsvetkov@exchange.tamu.edu)

2015/2018

Andrea Alfonsi Idaho National Laboratory Email: Andrea.Alfonsi@inl.gov	Liangzhi Cao Xi'an Jiaotong University Email: caolz@mail.xjtu.edu.cn
Mohamed Abdelhalim ElSawi Khalifa University of Science, Technology & Research (KUSTAR) Email: mohamed.elsawi@kustar.ac.ae	Benjamin S Collins Oak Ridge National Laboratory Email: collinsbs@ornl.gov
Alexander Stanculescu Idaho National Laboratory Email: Alexander.Stanculescu@inl.gov	Germina Ilas Oak Ridge National Laboratory Email: ilasg@ornl.gov
Stephanie Kempf Bechtel Marine Propulsion Corporation Email: SAKempfNE@gmail.com	Nicholas R. Brown Brookhaven National Laboratory Email: nbrown@bnl.gov

2016/2019

Christophe Demaziere Chalmers University of Technology Email: demaz@chalmers.se	Sunil S. Chirayath Texas A&M University Email: sunilsc@tamu.edu
Carlo Parisi Idaho National Laboratory Email: Carlo.Paris@inl.gov	Wei Shen Canadian Nuclear Safety Commission wei.shen@canada.ca
Amanda L. Lang Duke Energy Email: Amanda.Lang@duke-energy.com	Hany Abdel-Khalik Purdue University Email: abdelkhalik@purdue.edu
Matthew Anderson Jessee Oak Ridge National Laboratory Email: jesseema@ornl.gov	Moussa Mahgerefteh Exelon Generation Co., LLC Email: moussa.mahgerefteh@exeloncorp.com

2017/2020

Dr. Cristian Rabiti Idaho National Laboratory Email: cristian.rabiti@inl.gov	Prof. Won Sik Yang Purdue University Email: yang494@purdue.edu
Dr. Florent Heidet Argonne National Laboratory Email: fheidet@anl.gov	Dr. Nicolas Stauff Argonne National Laboratory Email: nstauff@anl.gov
Dr. Alberto Talamo Argonne National Laboratory Email: alby@anl.gov	Manuele Aufiero University of California, Berkeley Email: manuele.aufiero@berkeley.edu
Dr. Blair P. Bromley Canadian Nuclear Laboratories Email: Blair.Bromley@cnl.ca	

2018 ANS Student Conference, April 5-7 2018, The University of Florida, Gainesville FL

By Zander J. Mausolff, Graduate Research Assistant, University of Florida, Gainesville FL

zanderm@ufl.edu

Overall, the student conference was quite successful, with over 450 attendees coming to Gainesville to enjoy the beautiful spring weather and help create an excellent technical program. The technical program had over 120 presentations, 50 posters, and 5 workshops. Out of the 120 presentations, there were 15 in the reactor physics track including two general reactor physics, one on advanced reactors, and one focusing on advanced molten salt reactor concepts. The quality of these presentations made it difficult to select a winner, but eventually Brianna Kaufmann of the United States Naval Academy and Alexander Swenson from the University of Wisconsin were chosen as the graduate and undergraduate winners, respectively. Brianna's work was on "Assessment of Pebble Motion on Fuel Utilization in a Pebble Bed Modular Reactor", while Alexander's was on "Surrogate Reactor Modeling for System Mass Optimization in Space Applications".



From left to right: Alexander Swenson, Brianna Kaufmann, and Prof. Sedat Goluoglu

PHYSOR 2018

<http://physor2018.mx>

By Gustavo Alonso and Juan Luis François

The PHYSOR 2018 was held in Cancun, Mexico, from April 22 to 26, 2018. PHYSOR has been held fifteen times including this, since the first one in 1990 in Marseille, France.

The theme of the conference was “Reactor Physics Paving the Way Towards More Efficient Systems”. It covered ten tracks:

1. Reactor Analysis Methods;
2. Deterministic Transport Theory;
3. Monte Carlo Methods;
4. Fuel Cycle and Nuclear Criticality Safety;
5. Reactor Physics Experiments and Nuclear Data;
6. Reactor Concepts and Designs;
7. Reactor Operation and Safety;
8. Transient and Safety Analysis;
9. Education, Research Reactors and Spallation Sources Physics;
10. Radiation Applications and Nuclear Safeguards.

It also included five special sessions:

1. Uncertainty Analysis and Reduced Order Modeling;
2. Space Nuclear Systems;
3. Validation of Reactor Kinetics Measurements;
4. Hybrid Monte Carlo and Deterministic Methods;
5. Fast Reactors.

There were four plenary sessions:

- Measuring “the earth and the sky” by Massimo Salvatore,
- “Overview of NEA activities in the area of reactor physics” by Tatiana Ivanova,
- “IAEA support to advanced modelling and simulation for innovative nuclear systems” by Stefano Monti, and
- “International Activities in Support of Validation and Benchmarking of Multi-Physics Modeling and Simulation Methods” by Mark DeHart.

The papers accepted and presented during the conference were 368, which covered the state of the art in reactor physics. There were more than 200 different reviewers involved for the acceptance of those papers.

Papers were presented in five different parallel sessions along four days; there were a total of 61 sessions (see figure at the bottom of this text) and 71 invited co-chairs which took care of these sessions.

As part of the conference, five workshops were offered:

Workshop	Instructor	Institution
SERPENT	Jaakko Leppänen	VTT-Finland
NJOY	Jeremy Conlin	Los Alamos National Laboratory
COMET code/methodology MRT Methodology & RAPID code system	Farzad Rahnema Alireza Haghghat	Georgia Tech Virginia Tech
SARAX: A fast reactor neutronic code	Liangzhi Cao	Xi’an Jiaotong University
SuperMC: Nuclear design and safety evaluation	Bin Wu	Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences

The total attendance was 308 people: 111 students and 197 professionals, coming from 37 different countries.

	Monday	Tuesday	Wednesday	Thursday
8:00 – 17:30	Registration			
8:00 -10:00	Opening Ceremony	Track 1 Session 3 Track 1 Session 4 Track 2 Session 3	Track 1 Session 11 Track 3 Session 5 Track 4 Session 2	Track 1 Session 15 Track 7 Session 2 SS 1 Session 4
	Plenary 1 Plenary 2	Track 5 Session 2 Track 8 Session 2	Track 5 Session 4 Track 9 Session 1	Track 5 Session 7 SS 5 Session 1
10:00-10:20	Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:20-12:20	Plenary 3 Plenary 4	Track 1 Session 5 Track 1 Session 6 Track 2 Session 4	Track 1 Session 12 Track 3 Session 6 Track 4 Session 3	Track 1 Session 16 Track 3 Session 7 SS 3 Session 1
		Track 6 Session 1 Track 8 Session 3	Track 10 Session 1 Track 9 Session 2	Track 6 Session 3 SS 5 Session 2
12:20-13:30	Lunch	Lunch	Lunch	Lunch
13:30-15:30	Track 1 Session 1 Track 2 Session 1 Track 3 Session 1 Track 4 Session 1 Track 8 Session 1	Track 1 Session 7 Track 1 Session 8 Track 3 Session 3 Track 5 Session 3 SS 1 Session 1	Track 1 Session 13 Track 4 Session 4 Track 5 Session 5 Track 7 Session 1 SS 1 Session 3	Track 1 Session 17
15:30-15:50	Coffee Break	Coffee Break	Coffee Break	
15:50-17:50	Track 1 Session 2 Track 2 Session 2 Track 3 Session 2 Track 5 Session 1 SS 4 Session 1	Track 1 Session 9 Track 1 Session 10 Track 3 Session 4 SS 4 Session 2 SS 1 Session 2	Track 1 Session 14 SS 2 Session 1 Track 5 Session 6 Track 6 Session 2 Track 8 Session 4	

Treasurer's Report

By Florent Heidet

fheidet@anl.gov

Reactor Physics Division Treasurer, 2017-2018

The financials details provided by ANS for the year 2017 showed that RPD ended up with a balance of \$46,524.97. That is a bit above the planned budget, due to a slightly larger number of RPD members and fewer expenses than initially budgeted.

Looking at the first quarter financials for 2018 (as of March, 31 2018), the only expenses occurred are:

- \$2,500 in support to the 2018 ANS Student Conference;
- \$707 in support to the Stamm'ler Reactor Physics Division Scholarship to make up for a low spending limit allowed by ANS Headquarters.

The allocation of \$6,000 budgeted for the Stamm'ler scholarship was suspended based on this scholarship being fully funded. The situation will be discussed at the upcoming RPD Executive Committee meeting.

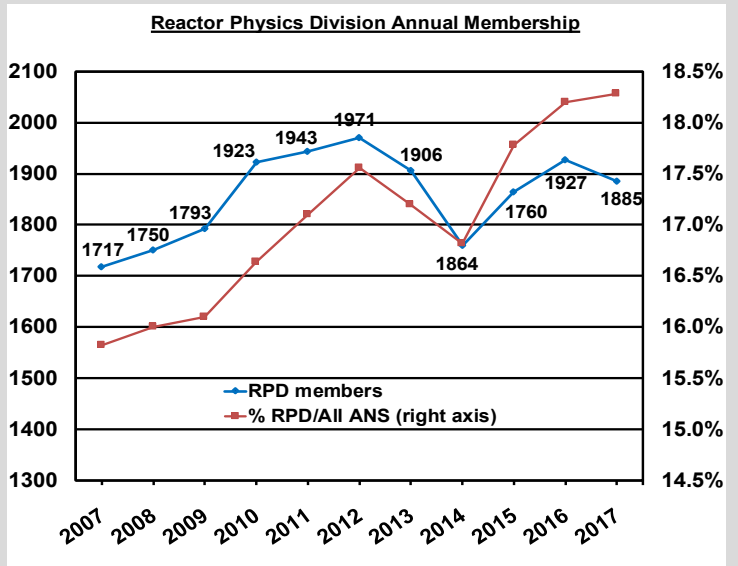
At the time of this newsletter the financial outcome of the PHYSOR 2018 conference is unknown. This will constitute the main income to RPD for 2018.

Membership

By Florent Heidet

fheidet@anl.gov

The RPD membership numbers for 2017 came in. Consistent with the overall ANS trend, the number of 2017 RPD members was 1885, a reduction of 43 members compared to 2016. It should be noted that RPD is slowly, but progressively, increasing its relative importance within ANS: 18.3% of ANS members are RPD members. The RPD membership evolution over the years is shown in the figure below.



American Nuclear Society Reactor Physics Division

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Reactor Physics Division Newsletter

Anna Erickson, RPD Secretary

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