

Reactor Physics Division

Officers

Florent Heidet – Chair
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Anna Erickson – Vice-Chair
erickson@gatech.edu

Germina Ilas – Treasurer
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Amanda Lang – Secretary
amanda.lang@duke-energy.com

Todd Palmer – Immediate Past Chair
palmerts@ne.orst.edu

Executive Committee

(Terms Expiring June 2020)

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Matthew A. Jessee
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(Terms Expiring June 2021)

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Dave J. Kropaczek
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Zach McDaniel
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(Terms Expiring June 2022)

Nathan J. Roskoff
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Pavel V. Tsvetkov
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Alireza Haghighat
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Hyung Jin Shim
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A Message from the Chair

Florent Heidet
fheidet@anl.gov

Dear Friends and Colleagues,

It is my honor to now be serving as Chair of RPD after having served as an officer for the last three years and as a member of the program committee for over five years. While I have been contributing to the field of reactor physics since 2006 and made it my career, I almost took a totally different path (see picture for a “hint”). In the end, being nuclear engineers or scientists makes us uniquely positioned to positively impact the world! Right now is an exciting time for us, with the newly gained momentum toward building new reactors in the US and around the world!

As previously discussed, ANS is being forced to change and rethinking itself in order to remain viable and relevant in



the future years. ANS is initiating a very ambitious “change plan” which will impact all of us: while it is human nature to be reticent to change, we need to better understand how the proposed changes will impact our division. As the chair, I remain engaged in these discussions to ensure

Insights from the Board of Directors

Todd Palmer
palmerts@ne.orst.edu

This past year, the ANS Board of Directors, with substantial input from people from the broad constituencies of the American Nuclear Society, has been focused on the drafting, socialization, and dissemination of a Change

the interests of RPD’s members are heard and cared for. We will provide more details on these changes as progress is made.

I would like to ensure that the RPD leadership is adequately representing the overall RPD community. To this end I am asking the following few things from all of you:

- (1) reach out to any of the RPD leaders or officers with comments, ideas and suggestions,
- (2) participate in the upcoming PHYSOR meeting in March 2020, and
- (3) participate in the RPD committee meetings on the Sunday preceding every ANS meeting (these meetings are open to all).

See you all in Washington, DC or at future ANS meetings!

Plan. The Society is in need of substantial changes to strengthen the organization and ensure its long-term health and viability. I have been serving on the Implementation Team for the Change Plan, and while I am certain that there are and will be contentious and controver-

sial elements of the proposed path forward, I am heartened by the degree to which people throughout the Society are now engaged in the process. ANS is most definitely an imperfect institution; however, there is a sincere desire to improve...

Insights from the Board (cont.)

...It will be a challenge, but I have been injecting my viewpoint, born out of my experiences in RPD and MCD, and I do think they are being heard. I encourage ALL members of RPD to share become informed, and to share concerns with Division leadership as the process continues to progress.”

Todd Palmer is a Professor in the School of Nuclear Science and Engineering at Oregon



State University (OSU), and currently serves as the Associate Dean for Faculty Advancement in the OSU College of Engineering. Todd is currently between pets, is a music snob, and with his spouse Associate Professor Camille Palmer, simultaneously loved and hated owning Bombs Away Café – a New Mexican inspired restaurant and bar right across the street from the OSU campus.

Industry News

Duke Energy Will Seek Nuclear Plant License Renewals to Support Carbon Reduction Efforts

Rita Sipe

Duke Energy announced it will seek to renew the operating licenses of the 11 reactors it operates at six nuclear stations in the Carolinas for an additional 20 years. The first Duke Energy nuclear power plants will approach the end of their current operating licenses in the early 2030s. Rigorous, ongoing preventive maintenance programs across the nuclear fleet and technology upgrades and investments over the years at all stations have contributed to their continuing strong operating performance. The company expects to submit the license renewal application for its largest nuclear plant – Oconee Nuclear Station – in 2021, followed by its other nuclear stations. [Read more](#)

Honors & Awards

Dimitrios Cokinos
cokinos@bnl.gov
RPD Honors & Awards
Committee Chair

**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, when possible, is presented during the ANS Annual Meeting.

Nominate Now

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

Deadlines

Wigner Award: April 1, 2020

ECRP Award: August 1, 2020

Reactor Physics Standards

Dimitrios Cokinos
cokinos@bnl.gov
RPD Standards
Committee Chair

Work on the revision of several ANS-19 standards has continued during the past six months.

Revised standard ANS-19.1, “Nuclear Data Sets for Reactor Design” has already been published and is now available for purchase.

Standard ANS-19.3, “Steady State Neutronics Methods for the Analysis of Power Reactors” has been updated and is now undergoing the final Working Group reviews.

ANS-19.6.1, “Reload Startup Physics Tests for PWRs” is in the approval stage by the consensus committee.

ANS-19 continues to be a major contributor to the International Organization for Standardization (ISO).

The next ANS-19 meeting will be held in Washington at the Marriott Wardman Hotel on Monday morning from 9:00 to 10:30 am.

Dimitrios is currently a Guest Nuclear Scientist with the Department of Nuclear Science and Engineering at BNL. Past activities include work on reactor safety, accelerator production of tritium, U.S./Russian programs in nuclear safeguards and non-proliferation. He has a long association with RPD which he served at all levels and introduced new RPD Standards. Founder of the Wigner Award and co-founder of the ECRP Award. Current member of the Publications Steering Committee & the ANS Finance Committee.

Programs

Pavel Tsvetkov
RPD Programs Chair
tsvetkov@tamu.edu

Our Reactor Physics Division is expecting its usual significant presence at the ANS winter meeting in D.C..

We have over 60 papers in 10 sponsored and co-sponsored sessions broadcasting our high impact research efforts to the community. There are memorial sessions honoring Mr. Steve Bowman and Dr. Mark Williams. The series of special sessions focus on reactor physics innovation, core design, advanced reactors and research reactors. We feature current efforts to-

Get Involved!

Program Committee

Pavel Tsvetkov
tsvetkov@tamu.edu

On Sunday (Nov 17), the program committee will be discussing upcoming meetings, membership, best paper selections as well as solicit proposals for future special sessions and other topics. The PHYSOR 2020 topical meeting organization is on its way! The meeting will be in UK next year.

We encourage all ANS and RPD members, who are interested to engage and contribute, to come and attend our Sunday meeting if at the conference.

Treasurer's Report

Germina Ilas
ilasg@ornl.gov
RPD Treasurer



The 2019 RPD financials were received from ANS in October 2019, providing the status as of the end of the 3rd quarter of 2019. It is estimated that the RPD 2019 year-end fund balance will be \$42,569.

The major RPD expenses in 2019 consisted of the following:

Student support: \$2,500 was given to the 2019 ANS Student Conference.

Scholarships: two scholarship were awarded for a total of \$6,000.

ANS Young Professional Con-

gress: \$1,000 was given to support the 2019 ANS Young Professional Congress organized as part of the 2019 ANS Winter Meeting.

A draft budget for 2020 was prepared. It forecasts that the Division will receive approximately \$3,000 from ANS na-

tional in the form of membership dues. The 2020 draft budget contains a \$2,500 allocation for student support.

The RPD financial health will not be possible without your contributions. Please take a few minutes to renew your membership by the end of this calendar year.

Germina is a senior R&D staff in the Reactor and Nuclear Systems Division at ORNL. She also loves the freedom of the outdoors while not working, enjoying the breathtaking beauty of the mountains, the Smoky in her backyard, or at distant locations. Her next hiking adventure is Patagonia in 2020.

Industry News

The End of An Era Dr. Moussa Mahgerefteh

Three Mile Island Generating Station Unit 1 (TMI Unit 1) permanently shut down on Friday September 20, 2019, leaving a 45-year legacy of safe, reliable, carbon-free electricity generation and service to the community. TMI Unit 1's shutdown came just a few weeks after the 45th anniversary of its initial operation on September 2, 1974. Exelon Generation, which purchased TMI Unit 1 in 2000, had announced in 2017 it would prematurely close the plant if there was no change in Pennsylvania's energy policy. TMI Unit 1 had been operating at a loss for the past six years and would continue to be unprofitable without policy reform that recognizes the environmental and resiliency benefits from TMI and other zero-carbon nuclear energy plants across the state.

Since 2000, the station produced 16,000 megawatts of carbon-free electricity, enough to power about 800,000 homes and businesses, annually for almost two decades with virtually no greenhouse gas emissions. The plant offset more than 95 million metric tons of carbon, the equivalent of nearly 20 million cars off the road. It's also estimated the station and its employees contributed \$6 million to local charitable organizations and non-profits with employees spending almost 40,000 hours volunteering in the community. Safety and performance excellence remain a top priority with more than 5.9 million hours and counting worked safely in that time span. At the time of shutdown, the TMI Unit 1 reactor set a site record of running 709 continuous days, beating the station's previous record of 705 days set in 2009.

The premature retirement of TMI Unit 1, a world-class commercial nuclear power facility, is another sobering reminder of the challenges facing our industry, including the absence of federal and state policies that support valuing carbon-free nuclear energy the same way they value other forms of clean energy.

Scholarships

Benoit Forget
bforget@mit.edu
RPD Scholarships Chair

As in the past few years, the reactor physics division is proud to offer two scholarships:

- 1) the Rudi Stamm'ler undergraduate scholarship (3000\$), and
- 2) the Allan Henry / Paul Greebler graduate scholarship (3500\$).

Please encourage all deserving students pursuing research in the field of reactor physics to apply.

The application deadline is February 1st, 2020 and application forms can be found at: <http://www.ans.org/honors/scholarships/forms/>

Committees

Bylaws & Rules
Chair: Arzu Alpan, Westinghouse
Ronald Ellis, retired
Sedat Goluoglu, University of Florida
Luiz Leal IRSN, France
Moussa Mahgerefteh, Exelon
Bojan Petrovic, Georgia Institute of Technology
Pavel Tsvetkov, Texas A&M University
William Walters, Penn State

Honors & Awards
Chair: Dimitrios Cokinos, Brookhaven National Lab.
Robert Little, Los Alamos National Laboratory
Farzad Rahnema, Georgia Institute of Technology
Charles Rombough, CTR Technical Services, Inc.
Paul Turinsky, North Carolina State University

Standards
Chair: Dimitrios Cokinos, Brookhaven National Lab.

**Allan Henry/
Paul Greebler
Undergraduate Scholarship**
Chair: Benoit Forget, MIT
Dimitrios Cokinos, Brookhaven National Lab.
Mark DeHart, Idaho National Laboratory
Thomas Downar, University of Michigan
Jess Gehin, Idaho National Lab.
Scott Palmtag, North Carolina State University
Rudi Stamm'ler Graduate

Scholarship
Chair: Benoit Forget, MIT
Mark DeHart, Idaho National Laboratory
Fausto Franceschini, Westinghouse
Florent Heidet, Argonne National Laboratory

Winter 2019 Programs

Reactor Physics: General. Organizer: Pavel Tsvetkov (TAMU)

11/20/19 10:15 – 12:00 Reactor Physics General I (6 papers), Chair: Akio Yamamoto (Nagoya Univ.)
11/20/19 13:15 – 15:40 Reactor Physics General II (5 papers), Chair: William Walters (PSU)
11/21/19 0800 - 1000 Reactor Physics General III (5 papers), Chair: Abdalla Abou Jaoude (INL), Co-Chair: Zeyun Wu, Virginia Commonwealth University

Reactor Analysis Methods. Organizer: Pavel Tsvetkov (TAMU)

11/18/19 13:00 – 15:35 Reactor Analysis Methods I (5 papers), Chair: William Walters (PSU)
11/20/19 13:15 – 15:40 Reactor Analysis Methods II (5 papers), Chair: Kang Seog Kim (ORNL)

Reactor Physics Design, Validation and Operational Experience. Organizer: Pavel Tsvetkov (TAMU)

11/20/19 15:55 – 18:00 Reactor Physics Design, Validation and Operational Experience (5 papers), Chair: Pavel Tsvetkov (TAMU)

Innovations in Advanced Reactor Technology and Design through the ARPA-E MEITNER Program, Organizers: Matthew Jessee (ORNL), Rachel Slaybaugh (DOE ARPA-E)

11/19/19 10:15 – 12:00 Innovations in Advanced Reactor Technology and Design through the ARPA-E MEITNER Program (P) (3 papers & panel)

- Panel:
1. Rachel Slaybaugh (UC-Berkeley)
 2. Matthew Jessee (ORNL)
 3. Eric Ingersoll (Lucid Catalyst)
 4. The presenters of the 3 papers will follow the panel

Mark Williams Memorial Session: Sensitivity/Uncertainty Analysis in Reactor Physics Organizers: Luiz Leal (IRSN), Vladimir Sobes (ORNL)

11/19/19 13:15 – 15:40 Mark Williams Memorial Session SU Analysis in Reactor Physics I (6 papers). Chair: Luiz Leal (IRSN), Co-Chair: Vladimir Sobes (ORNL)
11/19/19 15:55 – 18:00 Mark Williams Memorial Session SU Analysis in Reactor Physics II (5 papers). Chair: Vladimir Sobes (ORNL), Co-Chair: Luiz Leal (IRSN)

“Hands-On” Core Design. Organizers: Amanda Lang (Duke Energy), Erin Wehlage (Studsvik)

11/19/19 15:55 – 18:00 Hands-On Core Design Panel (P)

- Panel:
1. Amanda Lang (Duke Energy)
 2. Erin Wehlage (Studsvik)

Nuclear Data for Advanced Reactor Applications. Organizers: Brad Rearden (ORNL), Vladimir Sobes (ORNL).

11/18/19 15:55 – 18:00 Nuclear Data for Advanced Reactor Applications I (4 papers). Chair: Brad Rearden (ORNL), Co-Chair: Vladimir Sobes (ORNL)
11/20/19 15:55 – 18:00 Nuclear Data for Advanced Reactor Applications II (4 papers). Chair: Vladimir Sobes (ORNL), Co-Chair: Brad Rearden (ORNL)

Steve Bowman Memorial Session: Evolution of SCALE. Organizer: William Wieselquist (ORNL)

11/18/19 13:00 – 15:35 Steve Bowman Memorial Session Evolution of SCALE Panel (P)
Panel: Mark DeHart (INL), Germina Ilas (ORNL), Matt Jessee (ORNL), Richard Lee (NRC), Rob Lefebvre (ORNL), Cecil Parks (ORNL), Brad Rearden (ORNL), Will Wieselquist (ORNL)

Versatile Test Reactor---Current Developments. Organizer: Florent Heidet (ANL)

11/18/19 15:55 – 18:00 Versatile Test Reactor - Current Developments I (5 papers). Chair: Florent Heidet (ANL)
11/19/19 10:15 – 12:00 Versatile Test Reactor - Current Developments II (5 papers). Chair: Matthew Bucknor (ANL)
11/19/19 13:15 – 15:40 Versatile Test Reactor - Current Developments III (5 papers). Chair: Aurelien Bergeron (ANL)

Research Reactors in Support of Advanced Reactors R&D (P). Organizer: Pavel Tsvetkov (TAMU)

11/20/19 10:15 – 12:00 Research Reactors in Support of Advanced Reactors R&D Panel (P) Moderator: Pavel Tsvetkov (TAMU)
Panel: Steven Lynch, Acting Chief of the Advanced Reactor Licensing Branch & a Research Reactor Licensing Project Manager, NRC

Alice Caponiti, Department of Energy, Office of Nuclear Energy
Steve Biegalski, Nuclear & Radiological Engineering & Medical Physics Program Chair, GA Institute of Tech.
Sean McDeavitt, Director, Nuclear Education and Science Center, Texas A&M University
Rusty Towell, Director, Nuclear Energy Experimental Testing Laboratory, Abilene Christian University
Kevin Clarno, University of Texas at Austin

Newsletter Prepared By:

Amanda Lang
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RPD Secretary

Amanda is a core design engineer at Duke Energy. She enjoys traveling (recently returned from Russia & the Baltics and soon headed to Thailand).



Program Committee

2016/2019

Christophe Demaziere
Carlo Parisi
Amanda L. Lang
Matthew Anderson Jessee
Sunil S. Chirayath
Wei Shen
Hany Abdel-Khalik
Moussa Mahgerefeteh

2017/2020

Cristian Rabiti
Florent Heidet
Alberto Talamo
Blair P. Bromley
Won Sik Yang
Nicolas Stauff
Manuele Aufiero

2018/2021

Andrea Alfonsi
Liangzhi Cao
Brandon Haugh
Dan Kotlyar
Alex Levinsky
Ben Betzler
Benjamin S Collins
Abdalla Abou Jaoude
Vefa Kucukboyaci
Zeyun Wu

