

Reactor Physics

Professional Division

Officers

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Get Involved

Reactor Physics Division Executive
 and Program Committee Meeting
 (Virtual)

Friday, June. 7th, 2024
 12:00 – 3:00 pm EST
<https://unm.zoom.us/j/93305936300>

We will decide on the PHYSOR 2026 host organization during the Program Committee Meeting. We hope to see you there!

A Message from the Chair

We have a lot to celebrate in the Reactor Physics Community! I tell my students that now is a very exciting time to enter the reactor physics field, and I believe this more than ever. Startup companies and established nuclear reactor vendors are exploring reactor designs to meet both traditional and novel nuclear power needs. Research scientists are constantly expanding the speed and accuracy of computational methods and are designing more-and-more informative experimental measurements. I believe that the future is bright for nuclear power, and that the Reactor Physics Division will remain at the heart of this future.

We can also celebrate the recent PHYSOR 2024 topical meeting, hosted at the Union Square Hilton in San Francisco, California. I personally had a great time at this meeting and enjoyed learning about cutting-edge research in our reactor physics community. The profit generated from PHYSOR will help support future generations of students and reactor physicists, and I would like to thank the PHYSOR 2024 Organizing Committee for planning such a successful meeting!

I look forward to PHYSOR 2026, and to exploring the exciting future of reactor physics with you all.

Cheers,
 -Chris Perfetti, PhD
 RPD Chair
 Associate Professor, Nuclear
 Engineering Department
 University of New Mexico



PHYSOR 2024: That's a wrap!

RPD celebrates another successful PHYSOR meeting with the completion of the PHYSOR 2024 conference in San Francisco, California. The meeting hosted 261 technical papers, including 68 student-led papers, which resulted in numerous, fruitful technical discussions. PHYSOR 2024 attendees included 383 scientists and engineers representing universities, companies, and laboratories from across the world.

The best student paper award winners included:

1. Michel Saliba, École Polytechnique Fédérale de Lausanne, "Measurement of the Prompt Decay Constant in a Zero Power Reactor Using a Novel 3D Detector System."
2. Keita Yoshikawa, Hokkaido University, "Simultaneous Adjustment of Uncertain Modeling Parameters and Experimental Data through Post-Irradiation Examination Data Analyses"
3. Rikuto Kasama, Nagoya University, "Loading Pattern Optimization for LWRs using Monte Carlo Tree Search"

PHYSOR 2024 also proved to be a financial success, generating a profit that will help to maintain RPD activities and student support in future years. The PHYSOR Organizing Committee extends its gratitude to all of the meeting's attendees and sponsor organizations for making PHYSOR 2024 a success!



Professor Barry Ganapol (right) celebrated his retirement by hosting a reception at the conference hotel's rooftop bar and restaurant.

Executive Committee

(Terms Expiring June 2024)

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(Terms Expiring June 2025)

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(Terms Expiring June 2026)

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(Terms Expiring June 2027)

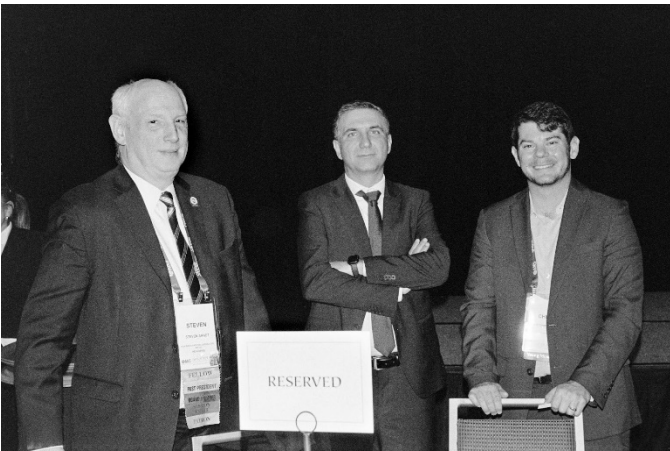
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Several members of the PHYSOR 2024 Organizing Committee enjoying conversation at the closing banquet.



The second PHYSOR plenary, organized by Dr. Eva Davidson, discussed “the Role of National Laboratories in Advanced Reactor Development.”



PHYSOR General Chairs Max Fratoni (left) and Chris Perfetti (right) as they begin relaxing following the PHYSOR 2024 closing ceremonies.



The third PHYSOR plenary, organized by Dr. Luka Snoj, discussed “Current and Future Needs for Reactor Physics Experimental Facilities.”



The first PHYSOR plenary, organized by Dr. Abdalla Abou-Jaoude, discussed “Industry Progress towards Reactor Development.”

Upcoming RPD Program Committee and Executive Committee Meetings

The next RPD Program Committee and Executive Committee Meetings will be held back-to-back on Friday, June 7th at 12:00pm ET. These meetings will take place virtually at:

<https://unm.zoom.us/j/93305936300>

We will decide on the PHYSOR 2026 host organization during the Program Committee Meeting. We hope to see you there!

Congratulations to the 2024 Early Career Reactor Physicist Award Winners!

Congratulations to Dr. Brendan Kochunas and Dr. Christopher Perfetti, who received the 2024 Early Career Reactor Physicist Awards!



Drs. Brendan Kochunas (left) and Chris Perfetti (right) receive the 2024 Early Career Reactor Physicist Awards.

Dr. Kochunas, Assistant Professor at the University of Michigan, was selected for this award for his significant and original research to develop and implement a 3D transport code, including advanced multi-physics acceleration methods, for practical full-core, pin-resolved LWR applications.

Dr. Perfetti, Associate Professor at the University of New Mexico, was selected for this award for the development and application of advanced sensitivity/uncertainty analysis methods for nuclear reactor physics and nuclear criticality safety.

Dr. Mike Ferrer, one of the two 2023 ECRP recipients, chaired a session at PHYSOR 2024 where Drs. Kochunas and Perfetti gave seminars on their research and were presented their awards.

Congratulations to Drs. Kochunas and Perfetti!

Honors and Awards

Eugene P. Wigner Reactor Physicist Award

RPD members are invited to submit nominations for the Eugene P. Wigner Reactor Physicist Award. The deadline for nominations is April 1st, 2025, and nomination forms and a list of past winners are available through the ANS Headquarters.

Early Career Reactor Physicist Award

This award is intended to honor the contributions of reactor physicists who at the time of nomination are thirty-nine years of age or younger. Nomination forms may be obtained from the ANS headquarters and the deadline for nominations is August 1st, 2024.

Dimitrios Cokinos
RPD Honors & Awards Committee Chair

Scholarships

The Reactor Physics Division is proud to announce the winners of our RPD sponsored scholarships. The recipient of the Rudi J.J. Stamm'ler award is Matthew Louis from Georgia Tech, and the recipient of the Allan Henry / Paul Greebler award is Walid Al Hajj from Virginia Tech.

Benoit Forget
RPD Scholarship Chair

Massimo Salvatores Scholarship

In 2020, the reactor physics community lost a true titan in industry – Dr. Massimo Salvatores or Max. Max was known for his tremendous achievements in reactor physics and initiatives in various scientific communities. Max believed in empowering the next generation of reactor physicists by transferring fundamental knowledge, best practices, and key lessons learned.

To honor Max's legacy as an educator and physicist, a graduate scholarship for students interested in the field of reactor physics was announced at PHYSOR 2022. Currently, the scholarship committee has successfully raised \$62,152.58 of the \$65,000 needed with tremendous support from industry partners and the community. The first round of applicants is expected in 2024-2025 academic year.

Program Committee

At the upcoming 2024 ANS Annual Conference, RPD will feature seven technical sessions for a total of 33 presentations. As usual this is only possible because of the hard work of the Program Committee members and the organizers of panels, and regular and special sessions. RPD is also sponsoring a panel titled *Overview of MARVEL Readiness* to be held on Monday, June 17 at 1 pm and co-sponsoring two sessions with the Fuel Cycle and Waste Management Division on *Nuclear Data Needs for Nuclear Criticality Safety and Advanced Reactor Concepts*.

In the meantime, the call for papers for the Winter Conference and Expo is already out and summaries are due Monday, July 1st, no extension.

The RPD Program Committee and Executive committee will hold a joint meeting on Friday, June 7th, 9-11 am PT (you can find the link on the ANS portal after logging in). The meeting is open, and everyone is welcome to attend. At this time, we will review bids for hosting PHYSOR 2026. As a reminder for those interested, the deadline for submitting bids is June 1st.

The annual meeting is also the time when new members get added to the Program Committee. Membership is on a volunteer base and no formal election is required. If you are interested in getting involved, do not hesitate to reach out or let us know during the meeting.

Massimiliano Fratoni
RPD Program Committee Chair

Treasurer's Report

RPD started 2024 with a balance of \$80,440. From January 1st to March 31st, the division brought in \$531 in revenues from membership dues. During that same time, the division spent around \$273 on awards (namely the RPD Early Career Reactor Physicist Awards given at PHYSOR 2024 to B. Kochunas & C. Perfetti) and \$3,500 in student support for the ANS Student Conference. As a result, this left the RPD with a deficit of around \$3,242, and with an end-of quarter budget of \$77,197. This is expected to be more than compensated from the proceeds of the PHYSOR 2024 conference. The conference was estimated to

bring in \$68,351 in profit, 12.5% of which (or \$8,544) will go towards RPD. Overall, the RPD expenses are in reasonably good health with a relatively deep cushion. Our budget does depend strongly on dues and contributions, so please make sure to select RPD as one of your divisions when you renew your ANS memberships!

Abdalla Abou-Jaoude
RPD Treasurer

Reactor Physics Standards

Highlights of the activities of ANS-19, Reactor Physics Standards Subcommittee, are summarized below.

ANS-19.1 "Nuclear Data Sets for Reactor Design"

A review of the current standard has been initiated with the goal to prepare a revised draft for review by the Subcommittee and the Consensus Committee, SRACC.

ANS-19.3, "Steady State Neutronics Calculations for the Analysis of Power Reactors",

This newly revised standard is in its five-year period of validity. At the completion of five years from its most recent release, the WG will perform a review to determine if the standard is still valid. Possible options are (a) reaffirmation, meaning the standard can continue as is for another five-year period; (b) revision, the standard needs to be updated with new/improved methods and/or data and (c) the standard can be withdrawn if it is outdated or it no longer meets the needs of the users. The latest version of ANS-19.3 includes an extended Appendix with a long list of computer codes for reactor analyses. It should be noted that appendices are not part of standards. They are provided as a convenience for the user.

ANS-19.3.4, "Determination of the Thermal Energy Deposition Rates in Nuclear Reactors",

This standard continues in its 5-year validity path.

ANS-19.10, "Methods for Determining Neutron Fluence in BWR and PWR Pressure Vessel and Reactor Internals"

Following an extended revision, the new draft is in the process of review by the Subcommittee.

ANS-19.13, " Initial Fuel Loading and Startup Physics Tests for FOAK Advanced Reactors"

In the past six months, a draft of ANS-19.13 and an appendix were approved by the Working Group and submitted to the ANS-19 Subcommittee for balloting. Panel discussions of this proposed standard were conducted at the Winter 2023 ANS meeting and the recent PHYSOR 2024 topical.

Dimitrios Cokinos
RPD Standards Committee Chair

Incoming RPD Secretary

Dr. Benjamin R. Betzler is the head of nuclear engineering at Radiant Nuclear, where he leads a team of nuclear engineers to design and analyze a portable nuclear microreactor that replaces diesel generators. He joined Radiant after over 8 years as a research staff member at Oak Ridge National Laboratory, where he contributed to the High Flux Isotope Reactor low-enriched uranium conversion project, the DOE Systems Analysis and Integration campaign, SCALE methods development and testing, and the Molten Salt Reactor campaign. Dr. Betzler formerly served as technical director of the Department of Energy, Office of Nuclear Energy Transformational Challenge Reactor Program, coordinating efforts between materials science, facility and licensing, manufacturing, and core and system design staff to develop a nuclear core leveraging advanced manufacturing technologies. Dr.



Betzler received his Ph.D. in Nuclear Engineering and Radiological Sciences from the University of Michigan.

List of Upcoming Conferences

- 2024 ANS Annual Conference
June 16-19, 2024
Las Vegas, NV USA
- GLOBAL2024
Oct. 6-10, 2024
Tokyo, Japan
- SNA+MC2024
Oct. 20-24, 2024
Paris, France
- 2024 ANS Winter Conference and Expo
November 17-21, 2024
Orlando, FL USA
- M&C 2025
April 27-30, 2025
Denver, CO USA
- 2025 ANS Annual Conference
June 15-18, 2025
Chicago, IL USA
- ANFM 2025
July 20-23, 2025
Clearwater Beach, FL USA



Advances in Nuclear Fuel Management (ANFM 2025)

July 20-23, 2025 | Clearwater Beach, FL | Sheraton Sand Key Resort

CALL FOR PAPERS

EXECUTIVE CHAIRS

General Chair

Ivan Maldonado (University of Tennessee)

Technical Program Chair

Scott Palmtag (North Carolina State University)

Finance Chair

Art Wharton (Studsvik Scandpower)

Publicity Chair

Lauren Wirick (Westinghouse)

SUMMARIES DEADLINE: FRIDAY, NOVEMBER 1, 2024

NOVEMBER

SUBMISSION OF SUMMARIES: **November 1, 2024**

JANUARY

AUTHOR NOTIFICATION OF ACCEPTANCE: **January 15, 2025**

APRIL

FULL PAPERS DUE: **April 1, 2025**

ABOUT THE CONFERENCE

It has been eight years since the last ANFM meeting. Since then, nuclear fuel management has changed significantly with the introduction of new fuel designs, advanced technology fuel (ATF), and longer cycle lengths. In the near future, we will see increased enrichments and increased burnup limits in light water reactors (LWRs). In addition, many new advanced reactor concepts are being planned that will require economical fuel cycles and the introduction of new fuel types. On top of this, machine learning and artificial intelligence applications loom on the horizon with the promise of increased efficiency. Join us in sunny Clearwater Beach as international representatives from fuel vendors, utilities, support organizations, national laboratories, and universities get together to share and discuss the latest developments in nuclear fuel management. The conference will include plenary sessions, technical sessions, panel sessions, and workshops.

GUIDELINES

Submit summaries (up to four pages) describing work that is of value to the nuclear fuel management community and the nuclear industry in general. Summaries will be reviewed and full papers (up to ten pages) will be required for the meeting. Papers are presented orally at the meeting, and presenters are expected to register for the meeting. All accepted and presented papers will be published in the conference's Proceedings. Published papers become the property of ANS. Under no circumstances should a paper be published in any other publication before presentation at the ANFM meeting. An ANS copyright form is required for all papers.

FORMAT

- We are first soliciting summary papers with a maximum length of four pages to be reviewed. Full papers with a maximum length of ten pages will be required if the summary is accepted. [Use the provided Word or LaTeX templates from the website](#). Papers not formatted according to the template will be rejected. If a paper exceeding ten pages is accepted, the page charge is \$100/page for any page more than ten.
- Do not include headers, footers, page numbers, bookmarks, text highlighting, or hyperlinks to references, figures, and tables in the text of your summary or paper in your final PDF document. Do not save your document as "read only."
- For the title of the summary or paper, Capitalize the First Letter of Major Words; do not use all capital letters.
- Do not use all capital letters for any part of any author's name.
- Enter the names of all authors into the Authors page in the EPSR. List the authors in the same order in which their names appear on the paper. Authors' affiliations should match the affiliation provided on the paper itself. If an author has multiple affiliations, enter the one that should be included in the program and in the meeting proceedings, assuming the summary is accepted.
- Your paper should be submitted in PDF format.

JOURNAL COLLABORATION

Authors will be able to submit a full-length journal article for a special issue of *Nuclear Technology*.

SUBMIT A SUMMARY

<https://epsr.ans.org/meeting/?m=431>

PROGRAM SPECIALIST

Janet Davis

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jdavis@ans.org





Advances in Nuclear Fuel Management (ANFM 2025)

July 20-23, 2025 | Clearwater Beach, FL | Sheraton Sand Key Resort

TECHNICAL TRACKS

- Addressing Practical Design Constraints on Fuel Management
- Advanced Fuel Assembly and Burnable Absorber Designs
- Advanced Technology Fuel (ATF)
- Advanced Fuel Forms (TRISO, metal fuel, etc.)
- Automated and Interactive Fuel Management Design and Optimization Tools
- Experiences and Advances in On-Line Core Monitoring
- Extended Fuel Cycles and Economic Analysis
- Innovative Core Loading Strategies and Methods
- Application of Artificial Intelligence and Machine Learning Tools
- Fuel Temperature Feedback for Steady-State and Transients
- Advances in Reactor Stability
- Utilities Experience in Reload Design and Licensing
- Utility Experience with 24-Month Fuel Cycles
- High Enrichment/High Burnup Strategies
- Management, Design and Operation Issues of Advanced Reactor Fuels
- Fuel and Core Design Based on Thorium Cycles
- Plutonium and Higher Actinide Recycle
- MOX Utilization in Reactors
- Generation of Cross Section Libraries
- Recent Experience with New ENDF/B and JEFF Cross Section Libraries
- Whole Core Transport Calculations
- Nodal and Lattice Physics Methods
- Validation of Core Analysis Tools for Fuel Management
- Model Comparisons Against Measured Reactor Power Data
- Generation-IV Design Concepts
- Advanced Moderators and Coolants (Graphite, Salt, etc.)
- Fuel Management in Fast Reactors
- Fuel Management in Gas-Cooled Reactors
- Design Experience with SMR Core Loading Patterns





International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering 2025 (M&C 2025)

April 27-30, 2025 | Denver, CO | Westin Denver Downtown

CALL FOR PAPERS

OFFICIALS

Honorary Chairs

Forrest Brown (LANL, UNM)
Anil Prinja (UNM)

General Chair

Christopher Perfetti (UNM)

Technical Program Chairs

Steven Hamilton (ORNL)
Kendra Long (LANL)
Paul Romano (ANL)

Assistant Technical Program Chairs

Helen Brooks (UKAEA)
Aaron Olson (SNL)
Sebastian Schunert (Radiant Nuclear)
Xu Wu (NCSU)

Student Program Chair

Miriam Kreher (LANL)

FULL PAPER DEADLINE: NOVEMBER 1, 2024

NOVEMBER

FULL PAPER DUE: **November 1, 2024**

DECEMBER

FULL PAPERS NOTIFICATION TO AUTHORS: **December 13, 2024**

JANUARY

FINAL FULL PAPERS DUE: **January 10, 2025**

ABOUT THE CONFERENCE

The International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2025) is part of a series of topical meetings organized by the Mathematics and Computation Division of the American Nuclear Society. M&C conferences, held every two years, represent a series of international forums organized and sponsored to bring together worldwide expertise related to nuclear science or technology, including mathematical and computational methods, numerical analysis, computer codes, computer architectures, and benchmarks for computationally solving problems in all disciplines encompassed by the Society.

GUIDELINES

Submit full papers describing work that is of value to the mathematics and computation community and to nuclear science and energy in general. Papers are presented at the meeting, and presenters are expected to register for the meeting. Papers will be scheduled for either a podium or poster presentation at the discretion of the meeting organizers. All accepted and presented papers will be published in the conference's proceedings. Published papers become the property of ANS. Under no circumstances should a paper be published in any other publication before presentation at the M&C 2025 meeting. An ANS copyright form is required for all papers.

FORMAT

We are soliciting full papers with a maximum of 10 pages. [Use the provided Word or LaTeX templates](#). Papers not formatted according to the template will be rejected. Papers exceeding 10 pages will be rejected. If an exception is made and a paper exceeding 10 pages is accepted, page charges are \$100/page for p. 11 and above.

Your paper should be submitted in PDF format.

Do not include headers, footers, page numbers, bookmarks, text highlighting, or hyperlinks to references, figures, and tables in the text of your paper in your final PDF document. Do not save your document as "read only."

For the title of the paper, Capitalize the First Letter of Major Words; do not use all capital letters.

Do not use all capital letters for any part of any author's name.

Enter the names of all authors into the Authors page in the EPSR. List the authors in the same order in which their names appear on the paper. Authors' affiliations should match the affiliation provided on the paper itself. If an author has multiple affiliations, enter the one that should be included in the program and in the meeting proceedings.

SUBMIT A PAPER

<https://epsr.ans.org/meeting/?m=424>

PROGRAM SPECIALIST

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International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering 2025 (M&C 2025)

April 27-30, 2025 | Denver, CO | Westin Denver Downtown

CALL FOR PAPERS

STUDENT-LED PAPERS

We welcome and encourage students to submit papers to this conference. Please ensure that papers for which the Primary Author is a student are identified as such in the yes/no student-status question in the Authors section of the EPSR. Judges will use this information to identify the conference's best student papers, which will receive a cash prize.

JOURNAL COLLABORATION

All authors will be invited to submit a full-length journal article for a special issue of *Nuclear Science and Engineering* following the conference.

TECHNICAL TRACKS

1. Deterministic Transport Methods and Applications
2. Monte Carlo Methods and Applications
3. Radiative Transfer Methods
4. High-Performance Computing
5. Multi-Scale, Multi-Physics Simulations
6. Machine Learning and Artificial Intelligence
7. Sensitivity Analysis and Uncertainty Quantification
8. Verification, Validation, and Benchmark Experiment Design
9. Nuclear Data and Nuclear Data Evaluations
10. Stochastic Geometry
11. Nuclear Safeguards and Global Security
12. Computational Fluid Dynamics
13. Computational Methods for Thermal Hydraulics
14. Computational Materials Science
15. Computational Biology and Health Physics
16. Advanced Reactor Design and Analysis
17. High-Energy-Density Physics and Plasma Physics

SUBMIT A PAPER

<https://epsr.ans.org/meeting/?m=424>

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