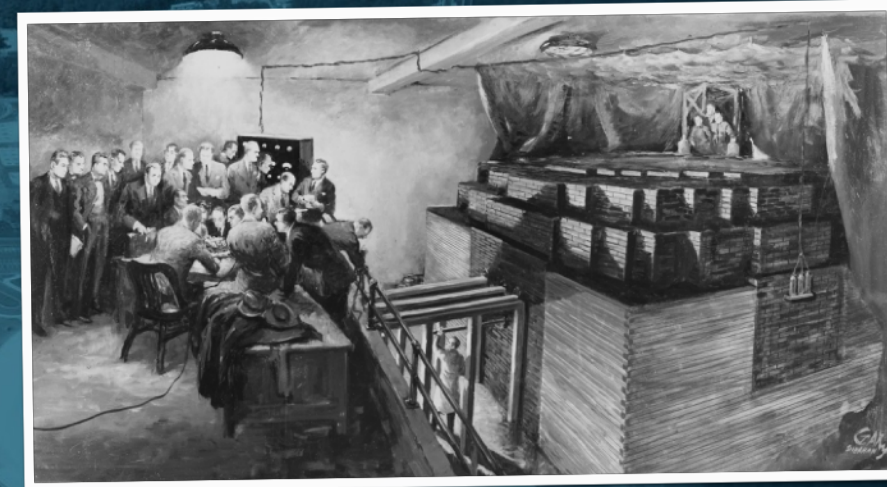


Workshop Goals

G.P.A. Nobre¹ and D.A. Brown¹



BNL Event Code of Conduct

<https://www.bnl.gov/conduct/event/>

Brookhaven National Laboratory is managed for DOE's Office of Science by Brookhaven Science Associates (BSA).

This Event Code of Conduct sets standards expected for ethical conduct by participants at BSA-managed events, including attendees, vendors, staff, volunteers, organizers, sponsors, and other stakeholders.

All who participate in BSA-managed events, on site at Brookhaven Lab or off, must conduct themselves in an ethical manner, demonstrating respect through common courtesy, civility, and effective communication.

BSA will not tolerate discrimination or harassment of any kind, including sexual harassment, bullying, intimidation, violence, threats of violence, retaliation, or other disruptive behavior.

Anyone asked to stop behavior deemed inappropriate must comply immediately.

If someone is in immediate risk of serious harm on site, dial 631.344.2222 from a mobile phone. From anywhere else, dial 911.

If inappropriate behavior is observed, notify the event coordinator as soon as possible. Concerns may also be reported through [EthicsPoint](#), which is hosted by an independent third party.

Consequences may include ejection from the event without a refund, if applicable. BSA reserves the right to notify appropriate authorities and organizations such as employers, institutions, or programs.

Code of Conduct translation:

Be:

- Professional
- Respectful
- Collegial (we should be friends)
- Civil (even if we disagree on so so many things)

We are passionate about what we do.
We cannot let our passions interfere
with being a good human.

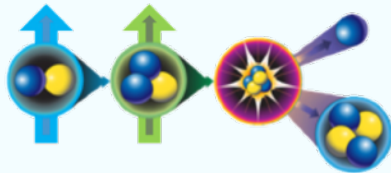
If there is doubt, pause, take a breath,
and think about what you are about to
say.

Why:

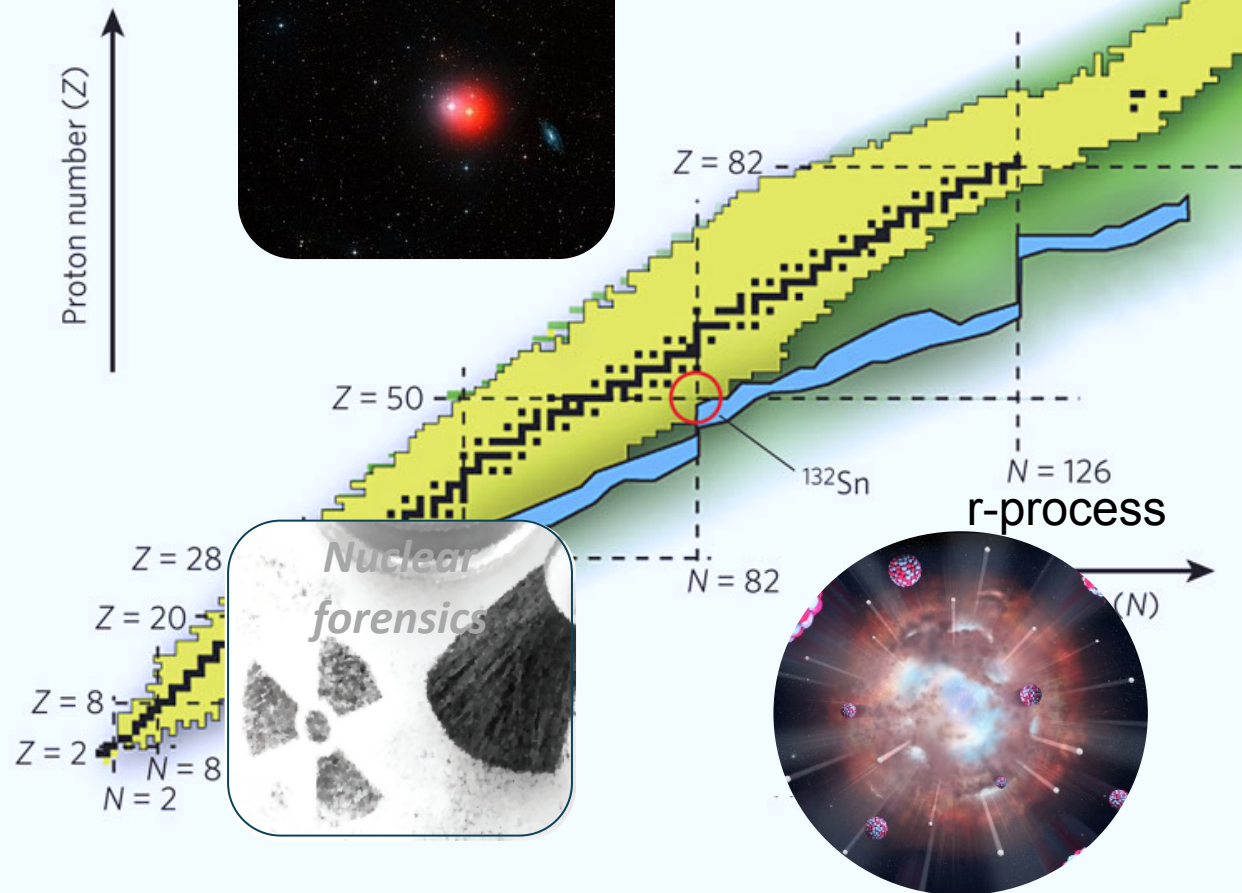
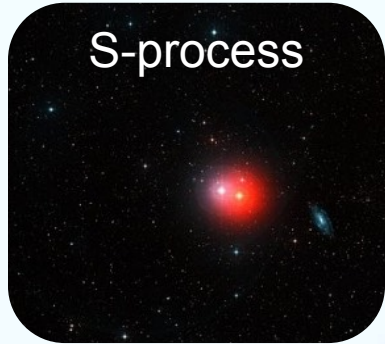
- Encourages productive scientific discourse
- (which has enumerable benefits to us and society)

Nuclear Data is the interface between nuclear physics and science and technical application that depend nuclear physics

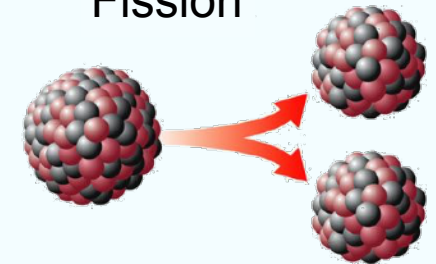
Thermonuclear
Fusion



S-process



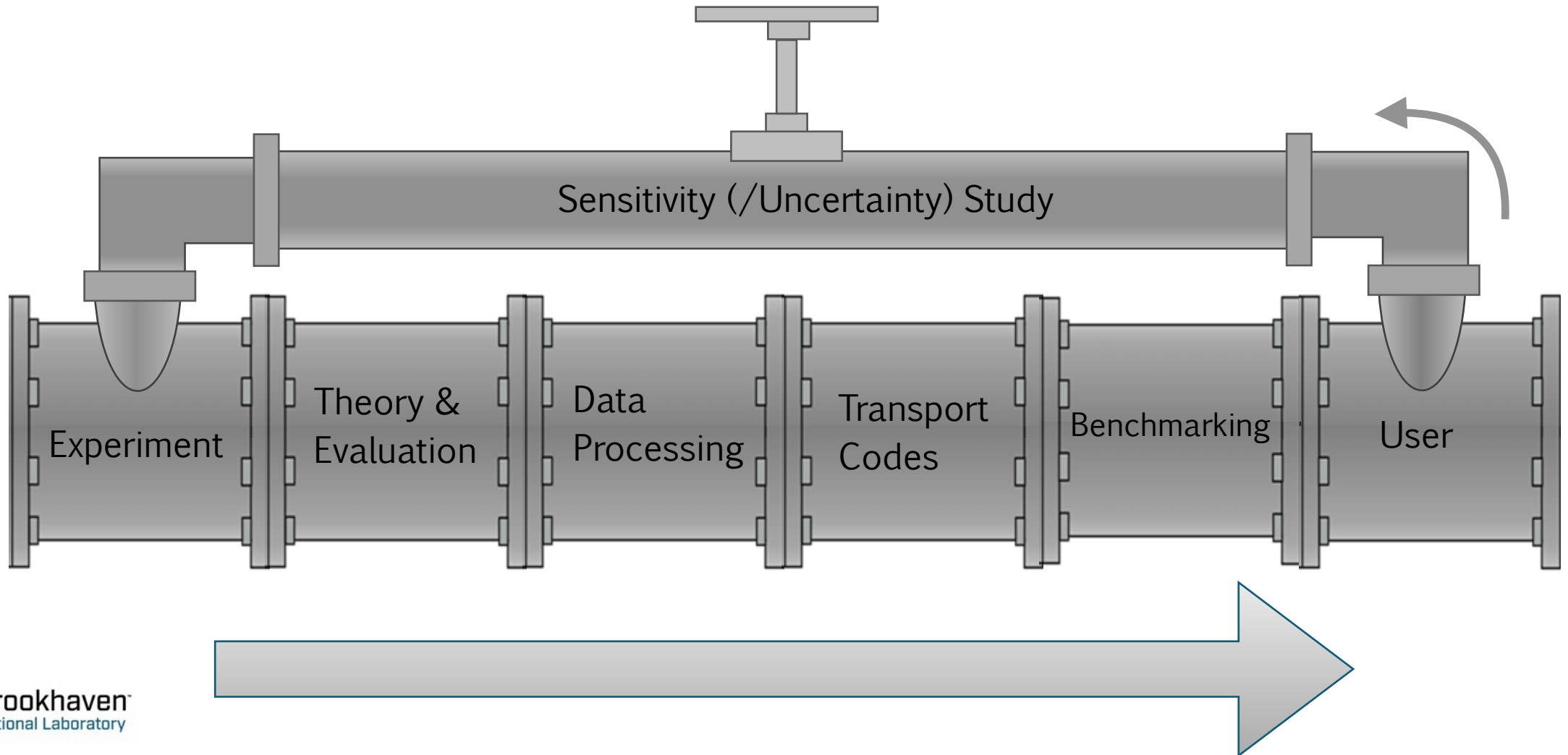
Fission



Neutron stars



The Nuclear Data Pipeline



ENDF/B consists of 15 sublibraries

- **Neutrons**
- Deuterons
- Alphas
- Protons
- **Gammas**
- Tritons
- ^3He
- Decay
- Standards
- Spontaneous fission yields
- Neutron-induced fission yields
- **Thermal scattering law (TSL)**
- Photo-atomic
- Electrons
- Atomic relaxation

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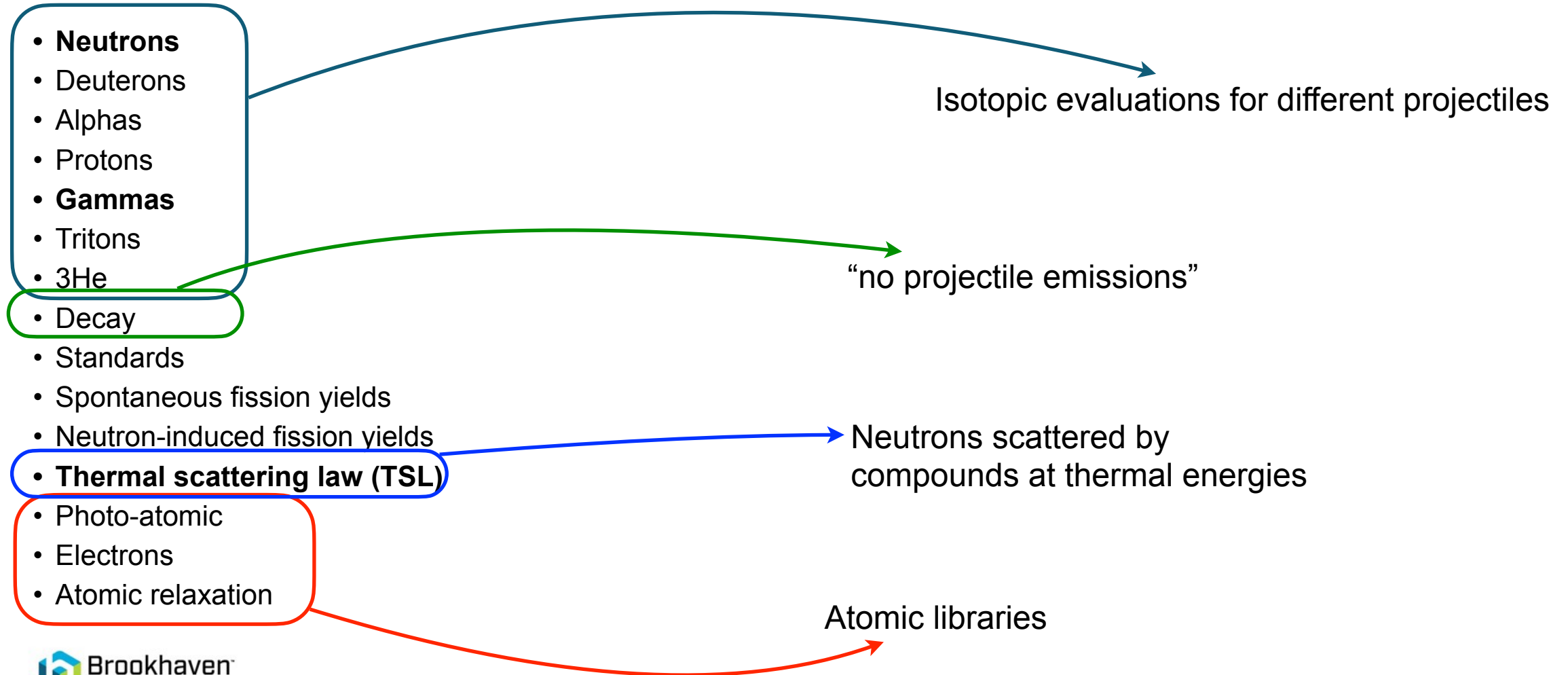
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Atomic libraries

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What makes TSL interesting?

de Broglie's wavelength
of the neutron

$$\lambda = \frac{h}{\sqrt{2mE}} = \frac{hc}{\sqrt{2mc^2E}}$$

$$hc \approx 1240 \text{ eV nm}$$

$$mc^2 \approx 940 \text{ MeV}$$

$$\lambda = \frac{28.6}{\sqrt{E[\text{eV}]} } 10^{-12} \text{ m}$$

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- This is particularly important for reactor moderators which slow down neutrons
- The material composition and structure becomes important
- Diffraction and interference between neutron wave functions!

<https://www.bnl.gov/regra-workshop/>

1st Reactor Graphite (ReGra) Workshop

Bringing together experts in the nuclear data community

Hosted by Brookhaven National Laboratory
July 8–9, 2025

[Home](#) [Registration](#) [Agenda](#) [Logistics](#) [Contact Us](#)

Brookhaven National Lab follows the nationwide identification requirements for federal site access. Anyone 18 years of age and older must have a valid REAL ID, Enhanced ID, Passport or [one of these alternate forms](#) of ID to gain access the Laboratory.

Meeting Goals and Objectives

The understanding of its short- and long-term behavior in fission environments is crucial not only for the operation and optimization of existing reactors but also for the efficient design and safe deployment of future advanced reactors. It is thus of utmost importance to incorporate in nuclear data libraries accurate evaluations of the interaction of thermal neutrons with graphite used in applications. This is however a complex task as there are challenges in defining the detailed characterizations of the studied material, appropriate modeling, and optimal validation suite. This will only be achieved by the concerted effort of experts of all relevant areas.

The objective of the 1st Reactor Graphite workshop is precisely to bring together this expertise and define a path forward in the following points:

- **Material characterization:** Not only there are different types of graphite used in reactor applications, with internal structure ranging from idealized crystalline to highly porous, but also prolonged exposure to neutron radiation affects and changes the material structure. We aim to clearly identify, from the application perspective, what material characteristics need to be described in order to properly model graphite performance.
- **Modeling:** Once the material characteristics are identified, we aim to investigate the different modeling approaches, and ideally identify preferred ones from the physics perspective.

Important Dates


May 2, 2025	General registration opens
June 8, 2025	General registration closes
June 8, 2025	Additional non-U.S. citizens registration deadline for all participants who do not have an active appointment with Brookhaven Lab. You will be directed to the appropriate form once you have completed the event registration.

Workshop Information

Dates: July 8–9, 2025 📅

Event ID: [E000006890](#)

Venue:
Brookhaven National Laboratory
Upton, NY 11973 USA

 [Meeting location and directions](#)

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 - We are here to **build consensus**, and should be **open-minded** about solutions we haven't considered before
- We are all smart people here
 - It is ok to **politely, respectfully, constructively** disagree
 - There are always valid points in the disagreement

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Science **ALWAYS** moves forward
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- Trust the process!
- Be patient!
- Even if takes a bit longer to get everyone to the same point, it will be worth

Acknowledgements

This work was supported by the Nuclear Criticality Safety Program, funded and managed by the National Nuclear Security Administration for the U.S. Department of Energy. Additionally, work at Brookhaven National Laboratory was sponsored by the Office of Nuclear Physics, Office of Science of the U.S. Department of Energy under Contract No. DE-SC0012704 with Brookhaven Science Associates, LLC. This project was supported in part by the Brookhaven National Laboratory (BNL), National Nuclear Data Center under the BNL Supplemental Undergraduate Research Program (SURP) and by the U.S. Department of Energy, Office of Science, Office of Workforce Development for Teachers and Scientists (WDTS) under the Science Undergraduate Laboratory Internships Program (SULI).

