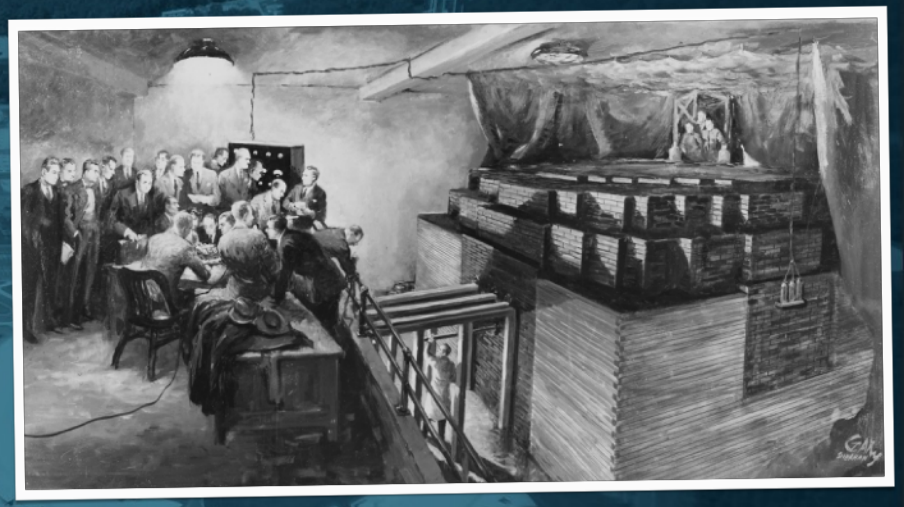
Workshop Goals

G.P.A. Nobre[1] and D.A. Brown[1]



National Nuclear Data Center

[1]National Nuclear Data Center, Brookhaven National Laboratory

Brookhaven National Laboratory

U.S. DEPARTMENT OF ENERGY

@BrookhavenLab

1st Reactor Graphite Workshop
BNL, Upton NY
July 8-9, 2025

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:

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.

Be:

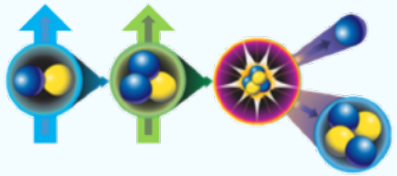
- Professional
- Respectful
- Collegial (we should be friends)
- Civil (even if we disagree on so so many things)

Why:

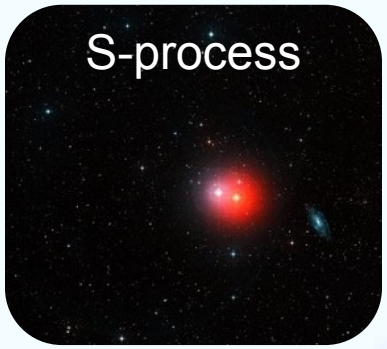
- Encourages productive scientific discourse
- (which has enumerable benefits to us and society)

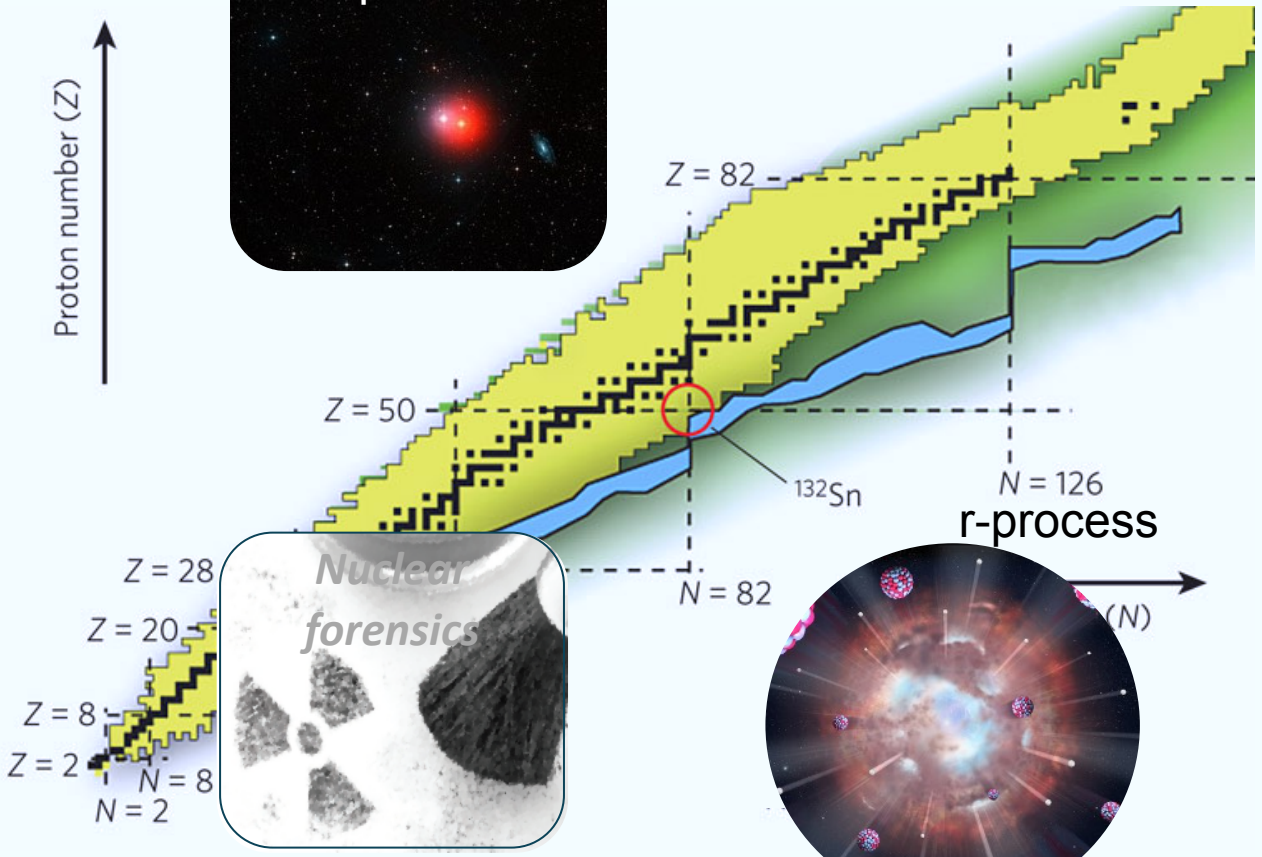
Nuclear Data is the interface between nuclear physics and science and technical application that depend nuclear physics

Thermonuclear Fusion

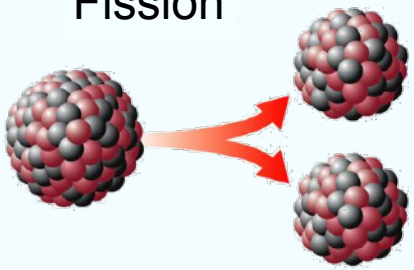


S-process

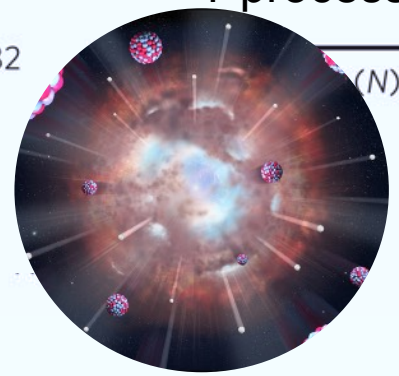




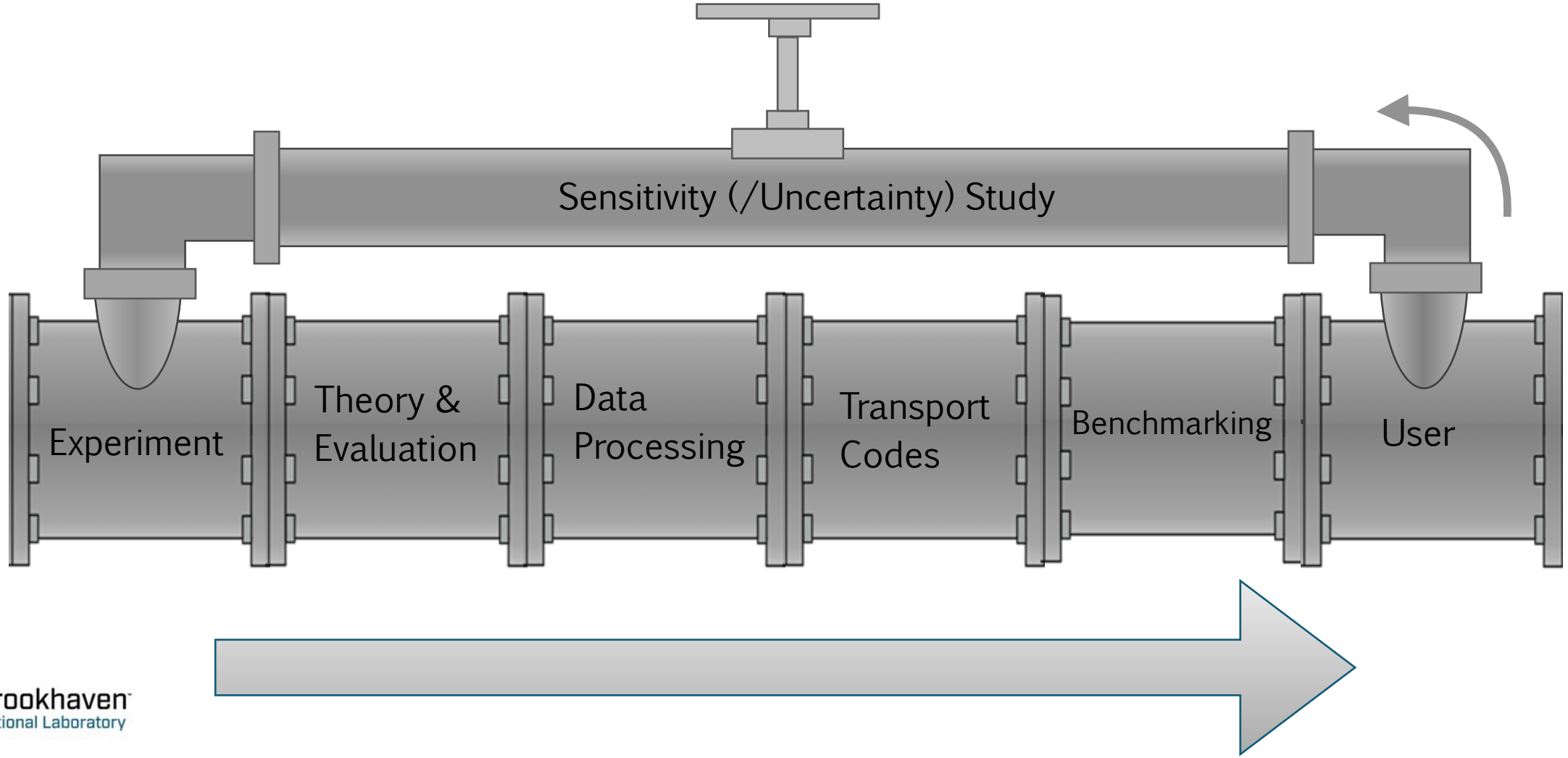
Fission



r-process



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
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Isotopic evaluations for different projectiles

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"no projectile emissions"

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Atomic libraries

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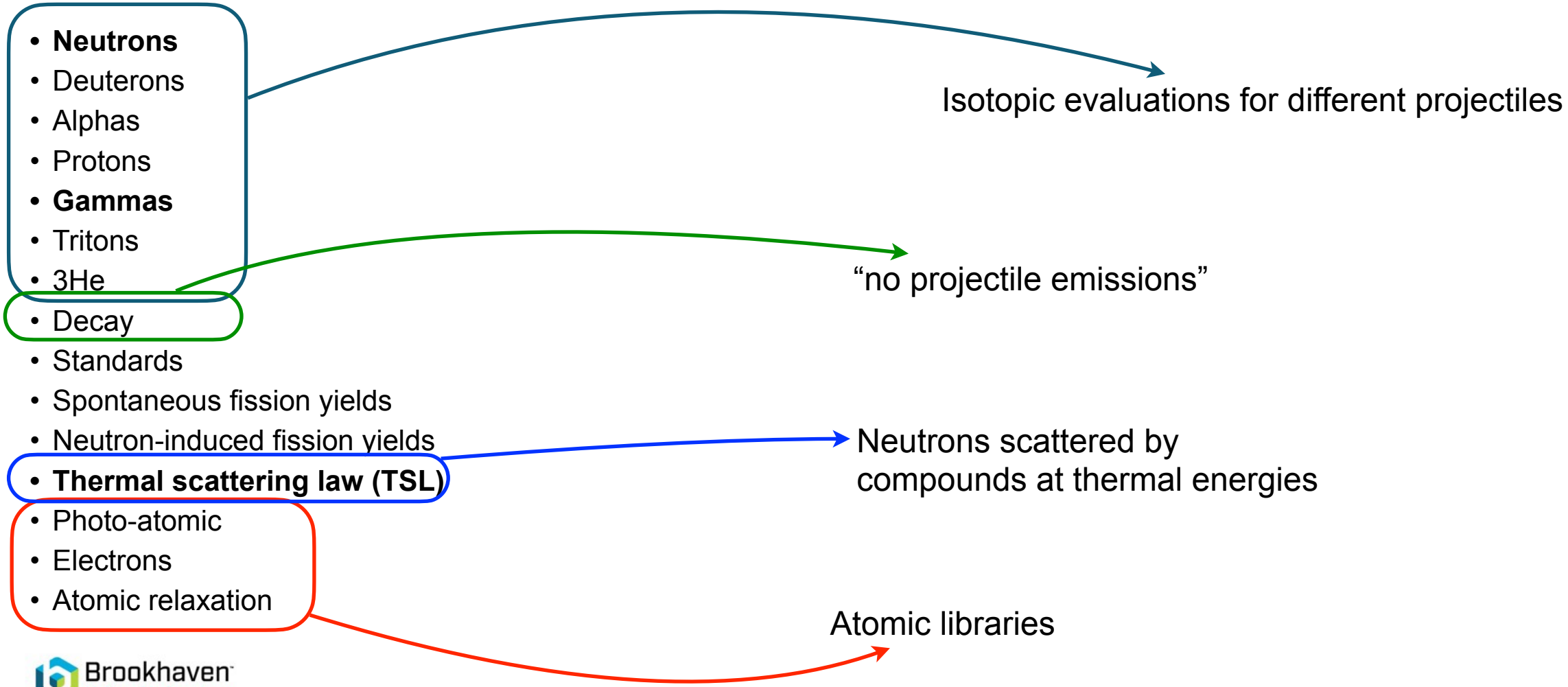

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What makes TSL interesting?

de Broglie's wavelength of the neutron

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

$hc \approx 1240$ eV nm

$mc^2 \approx 940$ MeV

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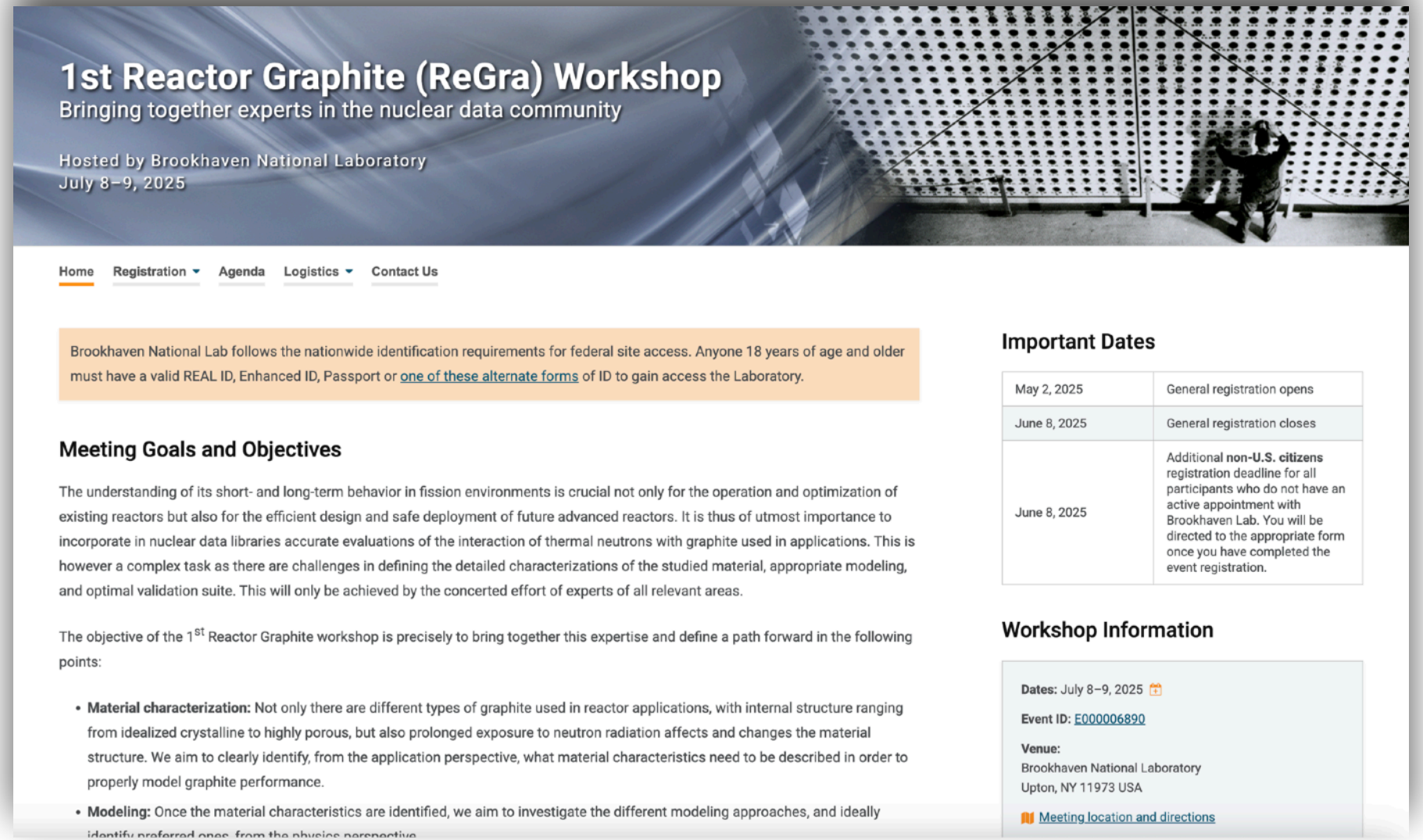
- This is particularly important for reactor moderators which slow down neutrons
- The material composition and structure becomes important
- Diffraction and interference between neutron wave functions!

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



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- Not a secret election/conclave to vote the preferred file
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- Not a secret election/conclave to vote the preferred file
  - Even if eventually decisions will have to be made, we do not need to rush to them
  - 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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    - It is not straightforward to define:
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Science **ALWAYS** moves forward **on average**…

- 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).

NCSP
NUCLEAR CRITICALITY SAFETY PROGRAM

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