Poster Session

NSE Nuclear Science and Engineering
science : systems : society

2021 NSE Graduate Research Expo

10:45 AM – 11:30 AM
Same Zoom link as the main session

NSE master's and doctoral students will share the latest in NSE research during a live poster session. Each poster presenter will be in a dedicated breakout room, and attendees will have the ability move from room to room.

A Zoom version of 5.3.0 or higher is needed to enable this functionality (MIT's version of Zoom already allows it).

Navigating the session

Similar to an in-person poster session, attendees will be able to go from poster to poster, and spend as much or as little time as they wish at each one. The full program is listed further below.

To go from the main room to a breakout room, or to go from one breakout room to another:

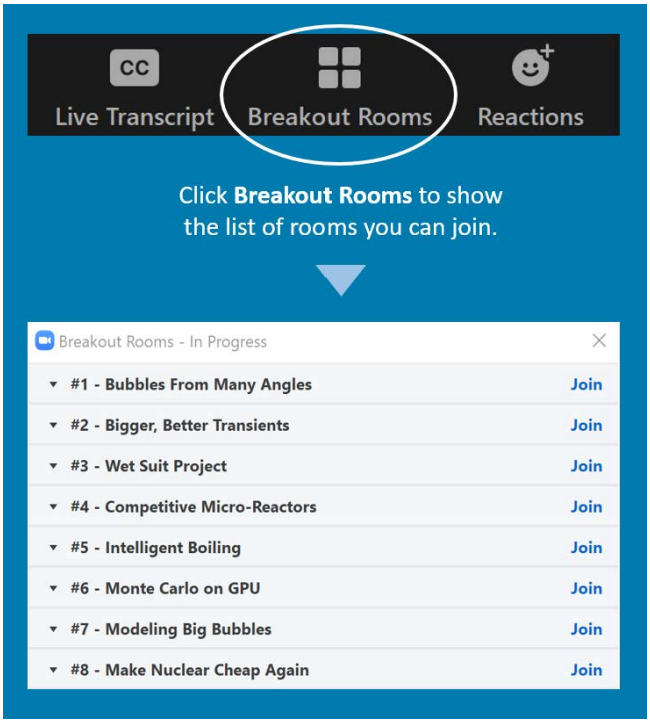
1. Click **Breakout Rooms**.
2. Find the poster you wish to visit and select "Join."

To return to the main room:

1. Click **Leave Room**. Leave Room

Note: **Leave Meeting** will close the Expo session. You will need the link you received at registration to rejoin the event.

If you need technical support during the event, please contact Teva Regule (teva@mit.edu).



Selecting an "Outstanding Poster"

Two "Outstanding Poster" prizes will be awarded based on the criteria listed on the right. One will be selected by a panel of judges; the other will be chosen by attendees.

All attendees will receive a link to the ballot and will get to vote *once* after they've seen all the posters they wanted to visit.

- **Technical content:** Technically accurate; well-designed experiments; solid interpretation of data
- **Visual design:** Effective data visualization; effective formatting choices and use of space
- **Research pitch:** Clear description of the motivation, problem, results, and significance of the findings
- **Q&A:** Succinctly and effectively answering questions; engaging meaningfully with the audience

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List of posters

Thirty posters will be presented, spanning a broad range of research areas including fission, fusion, materials, nuclear security, and quantum. During the live session on Zoom, each poster will be identified by a number and a tagline as shown below. The following table also lists the corresponding presenters, research advisors, and formal poster titles.

Fission	
#1 - Bubbles From Many Angles	**Gustavo Aguiar** (Prof. Matteo Bucci) *Laser and infrared diagnostics applied to nucleating vapor bubbles*
#2 - Bigger, Better Transients	**Miriam Kreher** (Prof. Benoit Forget) *Frequency Transform Method: A Better way for Monte Carlo Transients of Nuclear Reactors*
#3 - Wet Suit Project	**Anna Liang** (Prof. Jacopo Buongiorno) *Nanotechnology-Driven Strategies for Ultra-Low-Thermal-Conductivity Foam Based Textiles*
#4 - Competitive Micro-Reactors	**Isabel Naranjo De Candido** (Prof. Jacopo Buongiorno) *Flexible Siting Criteria and Staff Minimization for Micro-Reactors: Staff minimization strategy*
#5 - Intelligent Boiling	**Madhumitha Ravichandran** (Prof. Matteo Bucci) *Decoding the Triggering Mechanisms of Boiling Crisis with Artificial Intelligence*
#6 - Monte Carlo on GPU	**Gavin Radley** (Prof. Benoit Forget) *Monte Carlo Neutron Transport on GPUs*

#7 - Modeling Big Bubbles	**Eli Sanchez** (Prof. Emilio Baglietto) *Modeling the Birth and Death of Churn Bubbles*
#8 - Make Nuclear Cheap Again	**Robbie Stewart** (Prof. Koroush Shirvan) *The Horizontal, Compact HTGR*
#9 - Thermal Neutron Scattering	**Amelia Trainer** (Prof. Benoit Forget) *Thermal Neutron Scattering of Light Water*
#10 - High Fidelity Flow Field	**Yu-Jou Wang** (Profs. Koroush Shirvan and Emilio Baglietto) *High Fidelity Modeling and Uncertainty Quantification for Thermal Mixing*
#11 - The 3D boiling curve	**Limiao Zhang** (Prof. Matteo Bucci) *The Unifying Principle of the Boiling Crisis*
Fusion	
#12 - High Energy Density Plasmas	**Patrick Adrian** (Dr. Johan Frenje) *Utilizing Ion Stopping Power Measurements to Explore Fundamental Plasma Transport and Stellar Nucleosynthesis in High Energy Density plasmas at OMEGA and the NIF*
#13 - < Plasma | Quantum >	**Abtin Ameri** (Prof. Nuno Loureiro) *Can Quantum Computing Speed Up Plasma Physics Simulations?*
#14 - DIY HTS irradiation @20K	**Alexis Devitre** (Prof. Dennis Whyte) *Radiation Damage in Superconductors: A Show-Stopper for Compact Fusion?*
#15 - Defect-tolerant magnets	**Richard Ibekwe** (Prof. Zachary Hartwig) *Designing Defect-Tolerant High-Temperature Superconducting Magnets*
#16 - ICF deuteron diagnostic	**Justin Kunimune** (Dr. Johan Frenje) *Knock-on Deuteron Imaging of ICF Implosions at OMEGA*
#17 - Superconductors for Fusion	**Erica Salazar** (Prof. Zachary Hartwig) *High Temperature Superconductor Testing for Compact Fusion Energy Devices*
#18 - Infer plastic from elastic	**Patrick White** (Prof. Koroush Shirvan) *Effects of regulatory evaluations on the design of commercial fusion facilities*
Materials	
#19 - Finding materials for fusion	**Benjamin Dacus** (Prof. Michael Short) *Non-Destructive Thermoelastic Property Monitoring for Rapid Material Testing and Development*
#20 - Revealing hidden defects	**Charles Hirst** (Prof. Michael Short) *Revealing Hidden Defects via Stored Energy Measurements of Radiation Damage*

#21 - Positrons probe defects	**Julie Logan** (Prof. Michael Short) *Predicting Semiconductor Radiation Tolerance with Positrons, Protons, and Quantum Mechanics*
#22 - Metal Mixology	**Samuel McAlpine** (Prof. Michael Short) *Uncovering High Entropy Alloy Behavior with the Vacancy Exchange Potential*
#23 - Diamonds, Molten Salt & Lasers	**Sean Robertson** (Prof. Michael Short) *Evaluating Molten Fluoride Salt Thermophysical Properties via Transient Grating Spectroscopy*
#24 - Making metal w/ electrons	**Lucas Rush** (Prof. Antoine Allanore) *Electrowinning of Iron and Copper in a Molten Sulfide Electrolyte*
#25 - Functional Oxide	**Jiayue Wang** (Prof. Bilge Yildiz) *Exsolution Synthesis of Tunable Multifunctional Nanocomposite Perovskites*
Nuclear security	
#26 - Prevent Nuclear Smuggling	**Peter Lalor** (Prof. Areg Danagoulian) *Combining Passive Detection and Radiography to Prevent Nuclear Smuggling*
#27 - NRTA with Isotopic Source	**Peninah Levine** (Prof. Areg Danagoulian) *Smaller, simpler NRTA: Simulations Using an Isotopic Source*
Quantum	
#28 - Quantum Magnetometry	**Scott Alsid** (Prof. Paola Cappellaro) *High Frequency Magnetometry with Paramagnetic Defects in Diamond*
#29 - Quantum Network	**Changhao Li** (Prof. Paola Cappellaro) *Effective Routing Design on Quantum Networks*
#30 - Quantum Control	**Guoqing Wang** (Prof. Paola Cappellaro) *Quantum Information Applications Based on Modulated Quantum Control*