







Eli Sanchez, Postdoctoral Research Fellow

✉ es122530@mit.edu
(512) 284-0839

Education


- 2017 – 2024  **Ph.D. Massachusetts Institute of Technology** in Nuclear Science and Engineering
Thesis title: *Conventional Precision-guided Hypersonic Weapons: An Unconventional Threat to Strategic Stability?*
GPA: 4.5 / 5.0
- 2012 – 2016  **B.S. University of Texas at Dallas** in Chemistry, minor in Physics
GPA: 3.95 / 4.0
Magna cum laude


Research Experience

- 2024 – present  **Massachusetts Institute of Technology – Security Studies Program**, Post-doctoral Fellow
Project assesses the extent to which emerging technologies may enhance the conduct of anti-submarine warfare (ASW), and whether such technologies may introduce vulnerabilities to ballistic missile submarines (SSBNs). The research is technical in nature and aims to present order-of-magnitude estimates of the capabilities these technologies may offer. Technologies considered include: quantum sensors, artificial intelligence (AI), space-based sensing techniques, laser detection (LiDAR), antineutrino detection, and uncrewed autonomous vehicles.
- 2020 – 2024  **Massachusetts Institute of Technology – Department of Nuclear Science and Engineering**, Doctoral Researcher
Evaluated the implications of conventional, precision-guided hypersonic weapons for great power strategic stability, and identified arms control options for long range conventional strike weapons.
- 2017 – 2020  **Massachusetts Institute of Technology**, Doctoral Researcher
Developed mechanistic models for bubble breakup and coalescence in high gas fraction fluids for use in computational fluid dynamics simulations of nuclear power systems.
- 2016-2017  **Oak Ridge National Laboratory**, Participant in DoE Science Undergraduate Laboratory Internships (SULI) Program
Performed computational studies of radiation effects on the human body using MCNP, investigating the dependence of dose on bodily configuration (e.g. standing, sitting, bent over, etc.).



Research Publications

Journal Articles

-  E. Sanchez, “An analysis of nuclear escalation risks introduced by destination ambiguity in potential great-power conventional conflicts,” 2025. Submitted to *Texas National Security Review*.

- 2 E. Sanchez, "Seeing through 'transparent oceans': A technical assessment of potential advances in ballistic missile submarine detection achievable with novel sensing and signal processing technologies," 2025. Under revision at *International Security*.
- 3 E. Sanchez, F. von Hippel, and A. Glaser, "Estimate of uranium loading in us nuclear-powered submarine and aircraft carrier reactors," 2025. Manuscript in preparation for *Science & Global Security*.
- 4 E. Sanchez, "The counter-silo capabilities of conventional prompt strike weapons," *Science & Global Security*, 2025.  URL: <https://doi.org/10.1080/08929882.2025.2545051>.
- 5 B. Katherine, S. Dewji, and E. Sanchez, "Comparison of neutron organ and effective dose coefficients for pimal stylized phantom in bent postures in standard irradiation geometries," *Radiation and Environmental Biophysics*, vol. 57, 2018.

Fellowships



- 2024-2025  **Postdoctoral Stanton Nuclear Security Fellowship—Security Studies Program at the Massachusetts Institute of Technology**
-  **Physicists' Coalition for Nuclear Threat Reduction—Next Generation Fellowship**
One-year fellowship providing opportunities to engage in advocacy for nuclear weapons threat reduction.

Conferences and Workshops


- 2023, 2025  **Princeton School on Science & Global Security**
Week-long workshop on nuclear security issues hosted by the Princeton University Program on Science & Global Security.

Relevant Coursework


Massachusetts Institute of Technology

- Fall 2022  **16.851: Modern Military Operations**, 4 Semester hours
- Fall 2021  Teaching assistant for **22.04: Social Problems of Nuclear Energy**

Harvard University

- Fall 2020  **GOV 1735: Controlling the World's most Dangerous Weapons**, 4 Semester hours
- Fall 2021  **GOV 94NW: The Politics of Nuclear Weapons**, 4 Semester hours

Skills

- Computer  Python (incl. parallel processing), C++, MATLAB, MCNP, OpenFOAM, Unix/Linux, Bash scripting, LaTeX