



(/about/about-plasmas-and-fusion) Powering Possibilities for 75 years.

We're tackling the world's toughest science and technology challenges using plasma, the fourth state of matter.

[WHAT IS PLASMA? \(/ABOUT/ABOUT-PLASMAS-AND-FUSION\)](#)

Strengthening energy resiliency.

We're leaders in the science and engineering behind the development of fusion – a potentially limitless source of energy.

Top Projects

NSTX-U

(/NSTX-U)

ITER

(/RESEARCH/PROJECTS/ITER)

LTX-BETA

(LITHIUM-TOKAMAK-EXPERIMENT)

Building innovative technologies.

We're improving the production of microchips like those used in laptops and smartphones, as well as aiding in the production of key elements used in quantum computers.

MICROELECTRONICS

(/RESEARCH/APPLIED-
MATERIALS-
AND-

QUANTUM MATERIALS AND DEVICES

(/RESEARCH/APPLIED-
MATERIALS-
AND-
SUSTAINABILITY-
SCIENCES#QIS)

Advancing solutions for the future.

We're contributing to new and efficient technologies to maintain U.S. leadership in key industries.

ELECTROMANUFACTURING

(/RESEARCH/APPLIED-
MATERIALS-
AND-
SUS **AEROSOL SCIENCE**
SCIE (/RESEARCH/APPLIED-...JRING)
MATERIALS-
AND-
SUSTAINABILITY-
SCIENCES#SOLAR-
RADIATION-
MANAGEMENT)

Exploring the universe and beyond.

We strive to understand plasma from the lab to the cosmos, and for good reason: plasma, the fuel of fusion, makes up 99% of the visible universe.

DISCOVERY PLASMA SCIENCE

(/RESEARCH/DISCOVERY-
PLASMA-
SCIENCE)

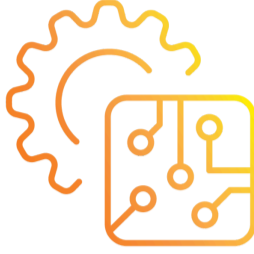
THEORY

(/THEORY)

Our Expertise

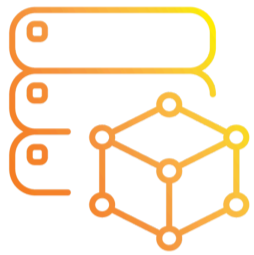
Plasma Science

We have an intricate understanding of plasma, and our work has shaped the field of plasma physics for decades.



Engineering

Using sophisticated tools, our engineers create state-of-the-art components and design intricate electrical and mechanical systems.



Computational Sciences

Our researchers use powerful supercomputers to develop complex models used in applications across science and engineering.



Sensors & Analysis

We provide measurement systems used around the world, which are key in understanding the conditions needed for fusion.

We Are the Lab

Our People

Inspired by the **vision**.
United by the **mission**.

Our dedicated employees serve the nation and humanity.

[OUR STORIES \(/I-AM-THE-LAB\)](#)



Daniel Stevens (/daniel-stevens).



Joy Fleming (/joy-fleming).



Jay Basler (/jay-basler).



(/David-Becker).

David Becker (/I-Am-The-Lab/David-Becker).



(/I-Am-The-Lab/Brielle-Schulz).

Brielle Schulz (/I-Am-The-Lab/Brielle-Schulz).



Careers

Advancing science requires an engaged and innovative workforce.

JOIN US

(/ENGAGE-
WITH-
US)

Our Impact

42+

Collaborations with Private Companies

347

Facility Users

357

Research Papers Published Annually

“Our national laboratory serves the state, the nation, and the world. For over 70 years, we’ve focused on the science and engineering behind fusion energy. Now, we’re building upon our mission, using our expertise in plasma physics not only to help make fusion energy a reality, but also to help develop innovative, sustainable technologies. It’s an exciting time to be here — one filled with great opportunity.”



[people/professor-steven-cowley](#)

Professor Steven Cowley

[\(/people/professor-steven-cowley\)](#)

Laboratory Director



Partnerships

From start-ups to Fortune 500s to leading scientific institutions, we team up with companies and organizations worldwide to advance science and develop cutting-edge technologies.

LEARN MORE

(/ENGAGE-
US/PARTNER-
PPPL)

Get Involved



Science Education

Through conferences, workshops, and events, we provide hands-on teaching for students and teachers to engage with science.

LEARN MORE

[\(/EDUCATION\)](#)

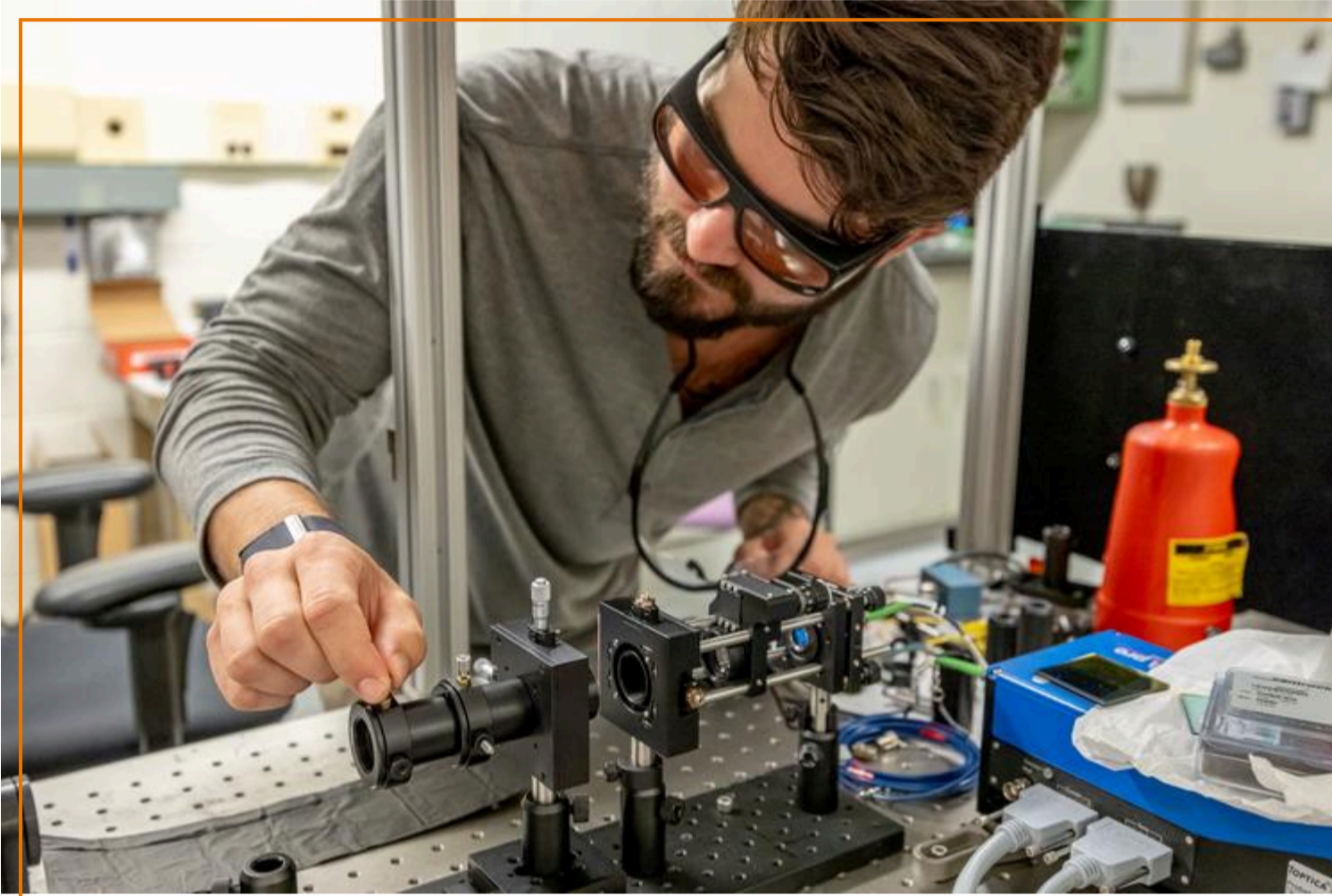


Apprenticeships

We offer the first U.S. registered apprenticeship program in fusion energy and engineering designed to train the next generation.

[LEARN MORE](#)

(/WORK-
WITH-
US/APPRENTICESHIPS)



Internships

We provide fully immersive internships year-round, both paid and for credit, for students at four-year and two-year institutions.

[LEARN MORE](#)

(/EDUCATION/UNDERGRADUATE)



Graduate Study

Our 300+ graduates are leaders in the field of plasma physics, working in academia, national laboratories, industry and beyond.

[LEARN MORE](#)

[\(/GRADUATE\)](#)

Our Story So Far

Where we've been...

Our roots go back to 1951 when magnetic fusion research at Princeton began under the code name "Project Matterhorn." Lyman Spitzer, Jr., professor of astronomy at Princeton University, conceived of a plasma being confined in a figure-eight-shaped tube by an externally generated magnetic field. He called this concept the "stellarator," and took this design before the Atomic Energy Commission in Washington. Shortly thereafter, this Laboratory was born.

[OUR HISTORY](#)

[\(/ABOUT/HISTORY\)](#)

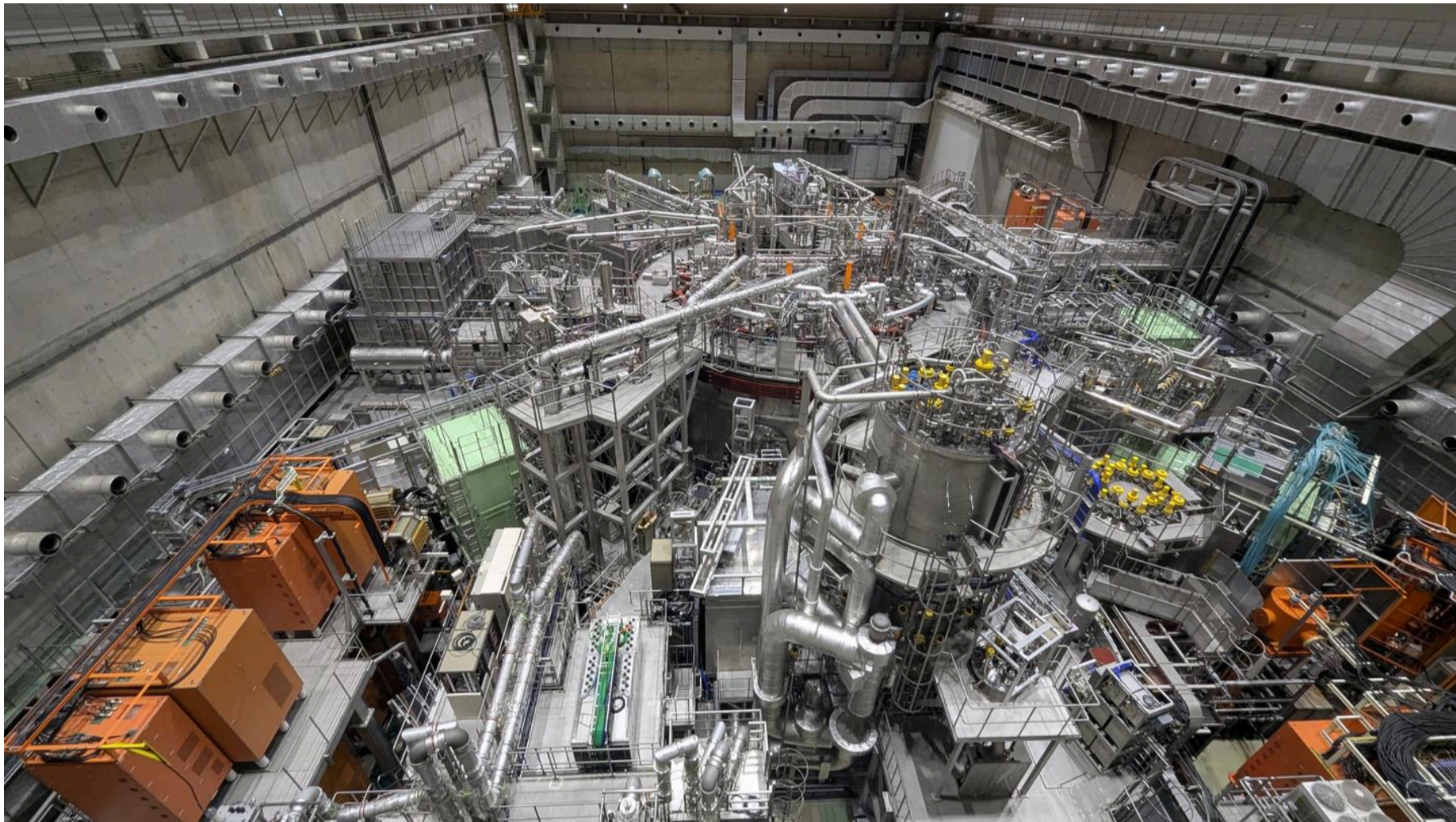
...and where we're going.

Princeton Plasma Innovation Center (PPIC): This multimillion-dollar building will serve as an international hub of fusion research and a platform for new programs. Its modern and efficient design will support the Lab's expanded scientific mission in microelectronics, quantum materials and devices, and sustainability science. With generous funding from the Department of Energy, PPIC will be the first new structure on the Laboratory campus in 50 years.

[READ MORE](#)

[\(/PRINCETON-
PLASMA-
INNOVATION-](#)

Latest News



[\(/news/2026/after-record-breaking-results-fusion-research-highly-successful-project-winding-down-make\)](#)

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[After record-breaking results in fusion research, this highly successful project is winding down to make way for new experiments \(/news/2026/after-record-breaking-results-fusion-research-highly-successful-project-winding-down-make\)](#)

March 24, 2026

[View all news \(/news\)](#)

Events

APR 1 [Colloquium: From Kilojoule Lasers to Compact X-ray Sources: High Energy Density Science at the Jupiter Laser Facility and LaserNetUS \(/events/2026/colloquium-kilojoule-lasers-compact-x-ray-sources-high-energy-density-science-jupiter\)](#)

[VIEW ALL EVENTS \(/EVENTS\)](#)