

RAYMOND DAVIS JR. FELLOWSHIP EXAMPLE RESEARCH AREAS

Proposals will be accepted in all STEM disciplines that align with the strategic missions of Brookhaven National Laboratory. Descriptions of Brookhaven research areas and scientific departments/divisions are available on the BNL website www.bnl.gov.

Listed below are some examples of research areas at BNL available to Fellows:

Understanding the Building Blocks of Nature

- Image the interior of nucleons and nuclei at the Electron-Ion Collider
- Probe the nature of the Quark Gluon Plasma at the Relativistic Heavy Ion Collider
- Explore the fundamental elements of the universe
 - Reveal the Secrets of the Higgs Boson and Exploring the Unknown
 - Elucidate the mysteries of Neutrinos and the Quantum Imprints of New Phenomena
 - Dark Energy and the Universe

Leading in Discovery with Light-Enabled Science at the National Synchrotron Light Source II

- Conduct cutting-edge photon science research as applied to areas of mission relevance

Developing Next-Generation Information Science and Technology

- Towards distributed quantum computing
 - Quantum Networks
 - Future Quantum Materials
 - Quantum Computation Advancing Theory
 - Quantum Enhanced Sensing
- Energy efficient materials and supporting CHIPS
 - Fundamental Microelectronics Materials Science for Energy Efficiency:
 - Characterization and Integration from Device to Systems:
 - Supporting CHIPS
- AI for autonomous facilities

Addressing Environmental and Societal Challenges

- Carbon-free energy
 - Science to Enable Integration of Carbon-Free Energy
 - Carbon Dioxide Conversion
- Climate Sciences and Cloud Chamber Initiative
- Protecting the bioeconomy
- Isotope Research for the National Need

Supporting U.S. National Security Efforts

- Pursue areas of national security that leverage and enhance Brookhaven's science and technology capabilities