

LDRD FY2021 Funded Proposals

LDRD Proj. No.	Project Title	P.I.	Dept.	Directorate
LDRD18-002	Analysis on the Wire (AoW)	Katramatos, Dimitrios	CSI	CC
LDRD18-017	Electrolyte Flow Battery for Smart Grid Application	Takeuchi, Esther	EPS	IS
LDRD18-026	Electron Beam Formation via Ionization Injection for Next Generation Accelerator R&D	Palmer, Mark	NPP	AD
S-LDRD18-033	Micro-pattern gas detectors	Kiselev,Alexander; Woody,Craig	NPP	PO
LDRD18-036	Finding a Lifshitz Point with the Beam Energy Scan II	Pisarski,Robert	NPP	PO
S-LDRD18-037	Forward and Backward Tracking at the EIC using small strip thin gap chamber detector	Ruan,Lijuan	NPP	PO
LDRD18-038	Ultra-fast High-Granularity Silicon Sensor Technology for Photon Science	Tricoli,Alexander	NPP	PO
S-LDRD18-039	Studying Confirmation and Nuclear Structure through Correlations and Quantum Entanglement at an EIC	Ullrich,Thomas	NPP	PO
LDRD19-001	Physics-Informed Autonomous Synthesis of Self-Assembling Materials	Yager,Kevin	CSI	CSI
LDRD19-002	Physics-Guided Optimization of Quantum Gate Operations	Lin, Meifeng	CSI	CSI
LDRD19-003	Building an Integrative Forecast System to Address Challenges Facing Renewable Energy Forecast	Liu, Yangang	EBNN	EE
LDRD19-008	Integrating Multimodal Experiments using Advanced Data Analytics Developed with Microscopic Theories for Quantum Materials	Stavitski, Eli	EPS	PS
LDRD19-010	X-Ray Vision of Topological Bosons in Condensed Matter	Dean, Mark	EPS	PM
LDRD19-013	In operando imaging and dynamics of 2D high temperature superconductor based, dense Q-bit arrays	Mazzoli, Claudio	EPS	PS
LDRD19-014	Linking Experiments to Algorithms For Solving Single-Particle Cryo-EM Challenges.	McSweeney, Sean	EPS	PS
LDRD19-015	Triplet-Driven Solar Energy Capture	Miller, John	EPS	CO
LDRD19-016	Demonstration of feasibility of sub-nm, picosecond electron microscope for the life sciences	Shaftan, Timur	EPS	PS
LDRD19-020	Cryo-CMOS: enabling technology for scalable quantum processors	Carini, Gabriella	NPP	IO
LDRD19-021	Silicon Drift Detector with internal gain and ultra-low noise charge preamplifier for single photon detection	Giacomini,Gabriele	NPP	IO
LDRD19-022	Sensors and electronics for Next-Generation Dark Energy Surveys	O'Connor,Paul	NPP	IO
LDRD19-023	Development of Low Background Interconnections	Raguzin, Eric	NPP	IO
LDRD19-024	Quantum UV Sensors based on Superconducting Nanowire Single Photon Detector	Rescia, Sergio	NPP	IO
LDRD19-026	Cathode development and deployment for EIC	Gaowei, Mengjia	NPP	IO
LDRD19-027	Real-time Particle tracking with Deep Learning on FPGAs	Cavaliere, Viviana	NPP	PO

LDRD19-028	High-Throughput Advanced Data Acquisition for eRHIC, Particle Physics and Cosmology Experiments	Chen, Kai / Huang, Jin	NPP	PO
LDRD19-029	Single Atom Ba-ID for nEXO using Electron Microscopy	Chiu, Mickey; Warren, John	NPP	PO
LDRD19-030	Towards SBU-BNL scalable quantum processing and network enabled by fast imaging of single photons	Nomerotski, Andrei	NPP	PO
S-LDRD19-035	Novel Approaches for self-assembly of bionanomaterials and enabling their new functions	Gang, Oleg	EPS	CFN
20-002	Advancing Atmospheric Prediction Capabilities in Urban Areas for Energy Resiliency and National Security	Vogelmann, Andrew	EE	EBNN
20-008	Power Efficient Plasma Device for removal of PFASs, 1,4 Dioxane & other contaminants of emerging concerns from water supply & wastewater at record water disinfection rates	Hershcovitch, Ady	CAD	NPP
20-010	Developing Sub-Picosecond Multi-Terrawatt CO2 Laser Capability	Pogorelsky, Igor	CAD	NPP
20-018	Building a Quantum Repeater Prototype Connecting BNL to NYC	Figuroa, Eden	IO	NPP
20-022	Topical Error Correcting Codes in the NISQ Era	Hormozi, Layla	CC	CSI
20-023	High-density superconducting interconnect for Quantum Control	Saira, Olli	CSI	CSI
20-024	Quantum Machine Learning for dissipative Dynamics of NISQ devices	Fang, Yao-Lung	CSI	CSI
20-029	Unraveling the Elusive Active Site Structures of Membrane Bound Non-Heme Diiron Enzymes	Ertem, Mehmed	CO	EPS
20-030	Robust physics-informed machine learning applications in spectro-imaging and microscopy	Ge, Mingyuan/ Flynn, Thomas	PS/CSI	EPS
20-031	Intelligent Quantum Dot Growbot for high throughput targeted quantum materials discovery	Ghose, Sanjit	PS	EPS
20-032	Accelerating materials discovery with total scattering via machine learning	Olds, Daniel	PS	EPS
20-035	Storage Rings for Quantum Computing	Brown, Kevin	CAD	NPP
20-037	The rice of the future: How growing practices can decrease human exposure to toxins	Tappero, Ryan	NC	EPS
20-038	Machine Learning for Real-Time Data Fidelity, Healing, and Analysis for Coherent X-ray Synchrotron Data	Barbour, Andi / DeGennaro, Anthony	PS/CSI	EPS
20-039	Electrochemical Systems for Large Scale Energy Storage	Takeuchi, Esther	IS	EPS
20-041	Conceptual Design Options for Future Upgrade of the National Synchrotron Light Source II (NSLS-II) Facility	Smalyuk, Victor	PS	EPS
21-001	Development of wavelength conversion techniques for generation of coherent radiation at the XUV to LWIR	Kupfer, Rotem	AD	NPP
21-005	Development of an Alexandrite based laser gain module for direct amplification of 780nm light for polarized electron beam applications	Inacker-Mix, Patrick	AD	NPP

21-006	Development of In Vitro Analysis Methodologies for Novel Radioisotopes Produced at the Brookhaven Linac Isotope Producer	Sanders, Vanessa	AD	NPP
21-009	Near-threshold quarkonium production and the mechanical properties of the proton	Hatta, Yoshitaka	PO	NPP
21-013	Development of an integrated multi-scale bioimaging capability	Liu, Qun	BO	EBNN
21-014	Transcriptional co-regulation of lignin biosynthesis, growth and defense	Xie, Meng	BI	EBNN
21-015	The Quadrature-based Oxidation Model: a new framework for simulating the evolution of atmospheric organics	Fierce, Laura	EE	EBNN
21-020	Electron Microscopy Monolithic Active Pixel Sensors (EM-MAPS) for Structural Biology	Deptuch, Grzegorz	IO	DO
21-021	Free Space Optical Link for Entangled Photon Distribution Over Long Distances	Haupt, Justine/Figueroa, Eden	IO	DO
21-022	Precision Synchronization of Multi-Sensor Distributed Networks	Manthena, Vamshi	IO	DO
21-023	Towards Edge Computing: A Software and Hardware Co-Design Methodology for ASIC-based Scientific Neuromorphic Computing	Miryala, Sandeep	IO	DO
21-025	Demonstration of quantum transduction from superconducting cavity to atomic vapor	Stankus, Paul / Figueroa, Eden	IO/CSI	DO
21-029	Bridging the Gap between Scientific Simulations and Experiments with Cycle-Consistent Generative Models	Ren, Yihui / Lin, Meifeng	CC	CSI
21-031	Designing rechargeable Zn-air batteries in aqueous electrolytes using noble metal-free bifunctional electro-catalysts for grid-scale energy storage (GES)	Wang, Lei	IS	EPS
21-032	Development of a Planning, Operation, and Control Framework for Hybrid Energy Storage and Renewable Generation Systems	Yue, Meng	IS	EPS
21-033	Interpretable Machine-Learning Aided Design of Dynamic Reaction Experiments	Wu, Qin	CFN	EPS
21-035	Observing time-resolved protein function using serial synchrotron crystallography	Fuchs, Martin	PS	EPS
21-037	Laser Switching to Hidden Phases in Quantum Materials	Pellicciari, Jonathan	PS	EPS
21-038	Laying the Foundation for an Integrated Center for Sequence-to-Function Discovery	Yang, Lin	PS	EPS
21-039	Quantum techniques for advanced atmospheric lidar	Tsang, Thomas	IO	DO
21-041	Towards the Realization of an EIC Detector Design	Ullrich, Thomas, Deshpande, Abhay	PO	NPP
21-042	A Path forward to retain BNL's Leadership in EIC Science	Aschenauer, Elke	PO	NPP
21-043	Accelerating state preparation in QFT calculations on a universal quantum computer	Izubuchi, T. / Lehner, C.	PO	NPP
21-044	DEDUCE: Differentiated Evaluation to Decrease Uncertainty in Computational Experiment	Yoon, Byung-Jun	CSI	CSI