

## MICROELECTRONICS CO-DESIGN RESEARCH

[DOE NATIONAL LAB PROGRAM ANNOUNCEMENT NUMBER: LAB 21-2491](#)

### Award Selection (August 2021)

The Office of Science of the Department of Energy is pleased to announce that 10 DOE National Laboratory led projects (listed below) have been selected to receive funding as part of competition for fundamental research related to microelectronics co-design. The awards are supported by four Office of Science programs: Advanced Scientific Computing Research (ASCR), Basic Energy Sciences (BES), Fusion Energy Sciences (FES), and High Energy Physics (HEP). The research efforts will advance basic knowledge and understanding in three broad topical areas: 1) new materials, chemistry, synthesis, and fabrication; 2) new computing paradigms and architectures; and 3) integrated sensing, edge computing, and communications.

Projects announced at this time are selections for negotiation of financial award. The final details for each award are subject to negotiations between DOE and the National Lab awardees.

Principal Investigator	Institution	City, State	Proposal Title
Guha, Supratik	Argonne National Laboratory (ANL)	Lemont, IL	Ultra-Dense, Near-Perfect, Atomic and Synaptic Memory
Taylor, Valerie	Argonne National Laboratory (ANL)	Lemont, IL	Threadwork: A Transformative Co-Design Approach to Materials and Computer Architecture Research
Braga, Davide	Fermi National Accelerator Laboratory (FNAL)	Batavia, IL	Hybrid Cryogenic Detector Architectures for Sensing and Edge Computing enabled by new Fabrication Processes
Garcia-Sciveres, Maurice	Lawrence Berkeley National Laboratory (LBNL)	Berkeley, CA	Co-Design and Integration of nano-sensors on CMOS
Ramesh, Ramamoorthy	Lawrence Berkeley National Laboratory (LBNL)	Berkeley, CA	Codesign of Ultra-Low-Voltage Beyond CMOS Microelectronics
Haegel, Nancy	National Renewable Energy Laboratory (NREL)	Golden, CO	Nitride materials and interfaces for radiation-hard integrated neutron detection
Vetter, Jeffrey	Oak Ridge National Laboratory (ORNL)	Oak Ridge, TN	Abisko: Codesign in the Wild: Designing Neuromorphic Hardware, Software, and Applications Concurrently using AI-enabled Methods
Graves, David	Princeton Plasma Physics Laboratory (PPPL)	Princeton, NJ	Diamond co-doping for quantum sensor applications
Aimone, James	Sandia National Laboratories (SNL)	Albuquerque, NM	COINFLIPS: CO-designed Improved Neural Foundations Leveraging Inherent Physics Stochasticity
McIntyre, Paul	SLAC National Accelerator Laboratory	Menlo Park, CA	Atoms-to-Systems Co-Design: Transforming Data Flow to Accelerate Scientific Discovery