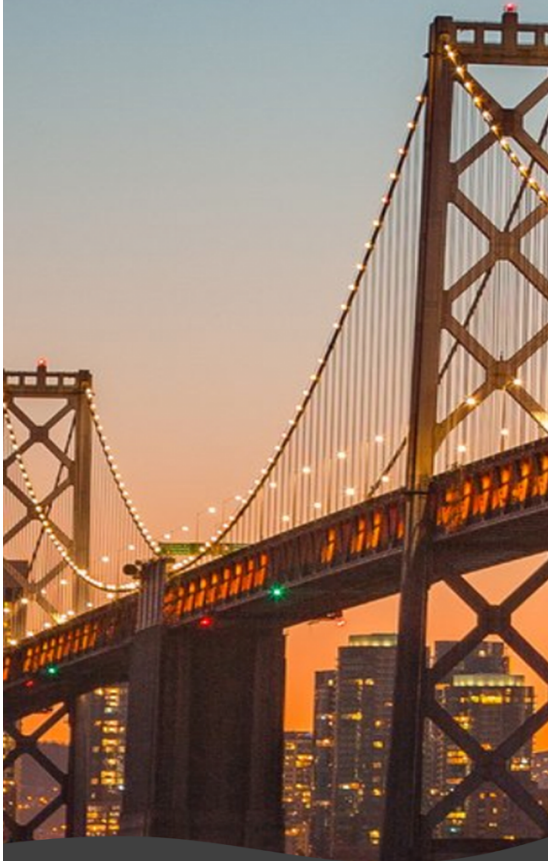




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# 2024 IEEE International Electron Devices Meeting

*December 7-11, 2024*

*Hilton San Francisco Union Square  
San Francisco, California*

IEDM is pleased to announce increased  
technical focus in the area of:

## **Advanced Logic Technology (ALT)**

### Topics

Papers are solicited in the following themes of interest:

- CMOS platform technologies & opportunities
- Logic device performance and circuit design challenges
- Advanced, novel process integration schemes and (applications-driven) scaling approaches
- Process module innovations and progresses in process control & process metrology
- Design technology co-optimization (DTCO), System technology co-optimization (STCO)

New or trending areas include:

- GAA (vertically stacked) nanosheets based devices and circuits; new channel materials
- Sequential, monolithic 3D integration, heterogenous chipllets, 2.5/3D integration, thermal management
- Logic for memory
- Interconnects (BEOL, Backside power delivery)
- BEOL compatible transistors

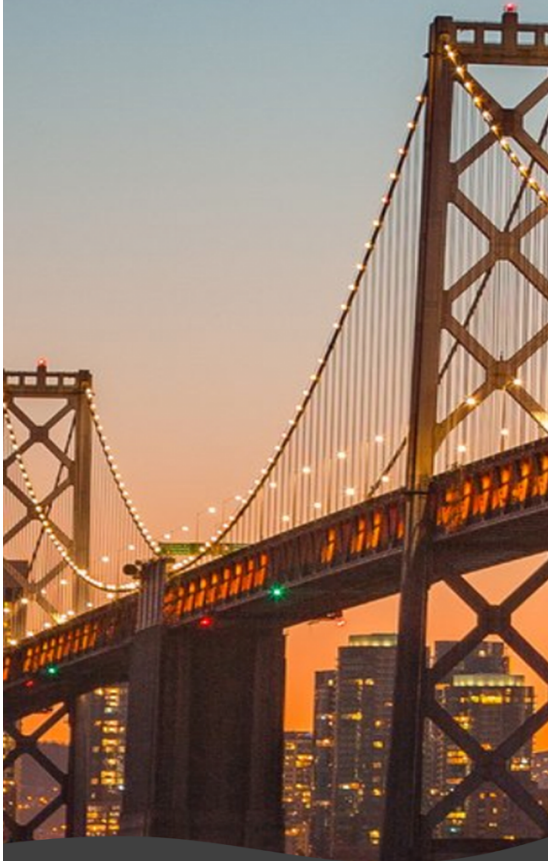
### Paper Submission

**Submission deadline: July 11<sup>th</sup>**

Single submission of final, four-page paper



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technical focus in the area of:

## **Emerging Device and Compute Technology (EDT)**

### Topics

Papers are solicited in the following themes of interest:

- 2D and devices on low-dimensional materials
- Non-CMOS emerging devices
- Neuromorphic and approximate computing devices
- Spintronic and magnetic devices
- Steep-slope devices
- Quantum computing devices

New or trending areas include:

- Topological materials and devices, and phase transitions transistors
- Emerging state machines, time dynamical systems, approximate computing
- Novel cryogenic devices

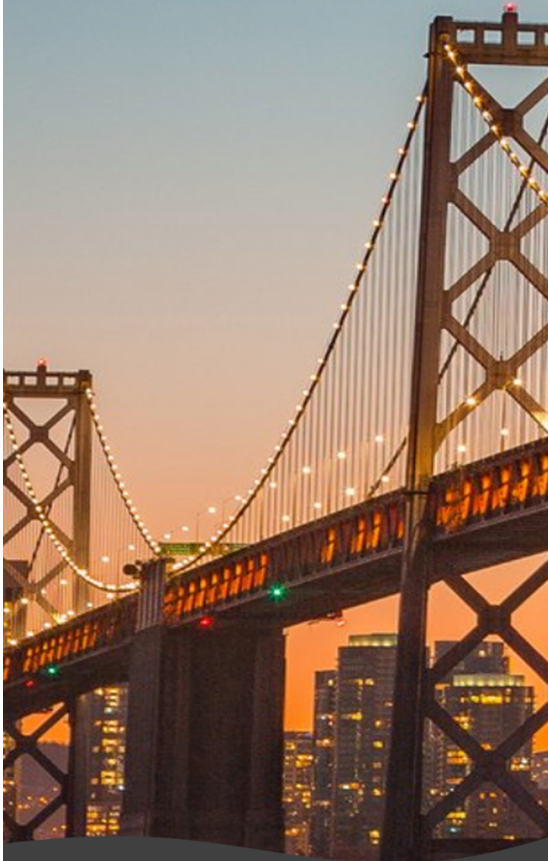
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IEDM is pleased to announce increased  
technical focus in the area of:

## Memory Technology (MT)

### Topics

Papers are solicited in the following themes of interest:

- Conventional memories
- Emerging memories
- 3D memory technologies
- Memories for AI and near-memory computing applications
- In-package memory for PPA augmentation

New or trending areas include:

- Memories to break the memory wall
- Memory-enabled artificial intelligence applications
- Memory-logic 3D stacking
- System-technology co-optimization
- Memory pooling and communication
- New memory hierarchy

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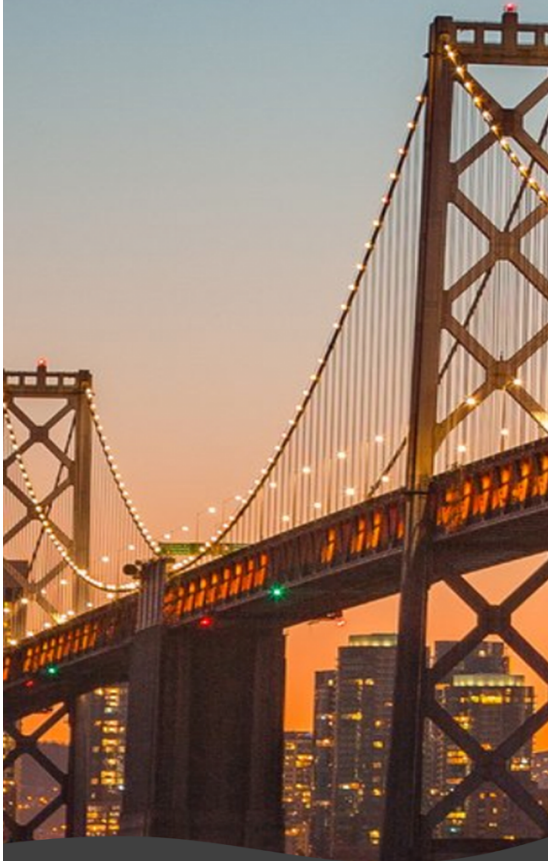
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IEDM is pleased to announce increased  
technical focus in the area of:

## Modeling and Simulation (MS)

### Topics

Papers are solicited in the following themes of interest:

- Technology CAD and benchmarking
- Advanced logic and memory device modeling
- Atomistic material, process, and interconnect simulation
- Compact models for DTCO
- Alternative computing device modeling
- Nanoscale (bio)sensors modeling

New or trending areas include:

- Multi-scale simulation with hybrid techniques
- Advanced packaging and 3D integration modeling
- Thermal modeling
- Low-temperature and quantum device modeling
- Device modeling for photonics
- Device modeling for in-memory and in-sensor computing

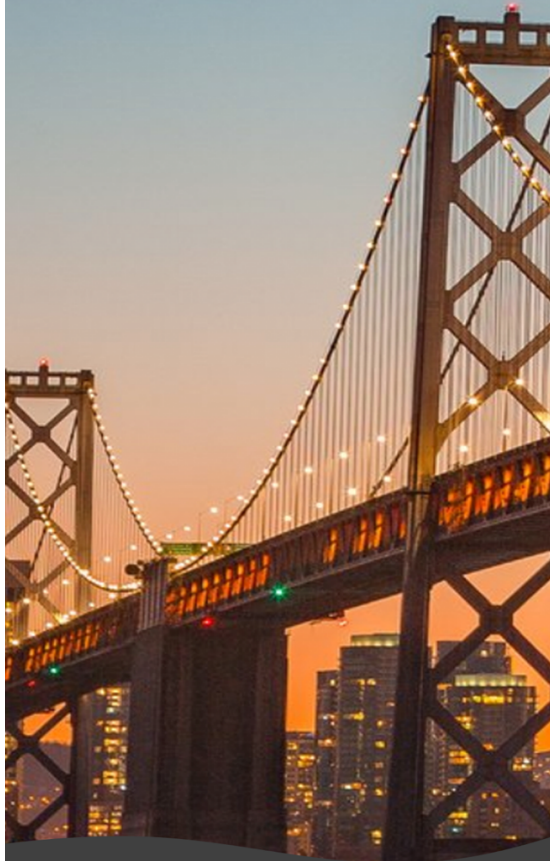
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IEDM is pleased to announce increased  
technical focus in the area of:

## **Neuromorphic and Novel Computing (NC)**

### Topics

Papers are solicited in the following themes of interest:

- SRAM, DRAM, Flash, ReRAM, MRAM, PCRAM, ferroelectric memory, and memory selector for analog or digital in-memory deep learning
- Memory, logic, and nanoelectronic devices with novel functions and/or materials for new and unconventional compute paradigms
- Probabilistic and approximate computing enabled by stochastic behaviors of devices and materials
- Emerging computing algorithms enabled by memory, logic, and nanoelectronic devices

New or trending areas include:

- Device-algorithm co-optimization
- Monolithic 3D integration for neuromorphic computing
- Neuromorphic sensors and in-sensor computing

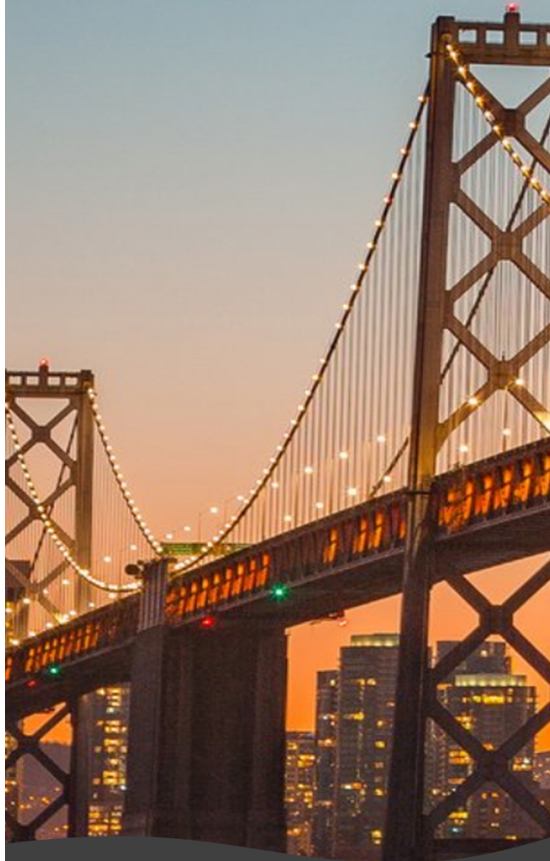
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IEDM is pleased to announce increased  
technical focus in the area of:

## **Optoelectronics, Displays and Imagers (ODI)**

### Topics

Papers are solicited in the following themes of interest:

- Heterogeneous optoelectronic integration including sources, modulators, or detectors
- Neuromorphic photonics
- Single photon emitters and detectors
- Luminescent devices based on new materials including perovskites and quantum dots
- Displays and imagers for augmented or virtual reality
- Holographic devices and displays
- Displays with unconventional form or size
- Photodetectors and imagers with new materials or flexible platform and printed electronics
- Imagers with ultra-miniaturized pixels, spectral bandwidth beyond visible, high sensitivity, or high time-resolution,
- Image sensors with pixels for range sensing, TOF, RGBZ, LIDAR

New or trending areas include:

- Photonic devices for quantum computation and sensing
- Intelligent image sensors
- Advanced on-chip optics for imagers
- In-display and under-display sensors

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IEDM is pleased to announce increased  
technical focus in the area of:

## **Power, Millimeter Wave, and Analog Technology (PMA)**

### Topics

Papers are solicited in the following themes of interest:

- Power and/or high speed (microwave to THz devices) devices, modules, and systems
- Manufacturing processes, device design, modeling, physics, and reliability of power and/or high-speed devices
- Fundamental studies on doping, traps, interface states, and device reliability for power and/or high-speed switching devices
- Micro and mm-wave devices, such as PAs, LNAs, switches and mixers.
- Energy harvesting devices and circuits
- Tunable passives, SAW/BAW/MEMS RF devices, antenna arrays

New or trending areas include:

- Wide bandgap and ultra-wide bandgap semiconductors such as SiC, (Al)GaN, diamond,  $\beta$ -Ga<sub>2</sub>O<sub>3</sub>, BN
- Large  $k_t^2$  piezoelectric material: LNO, LTO, AlN(Sc)...
- Power devices for applications for automotive and aviation to smart grid
- Device and circuits for 5G and 6G
- Antenna arrays and beam forming
- Extreme environment power and high-speed devices

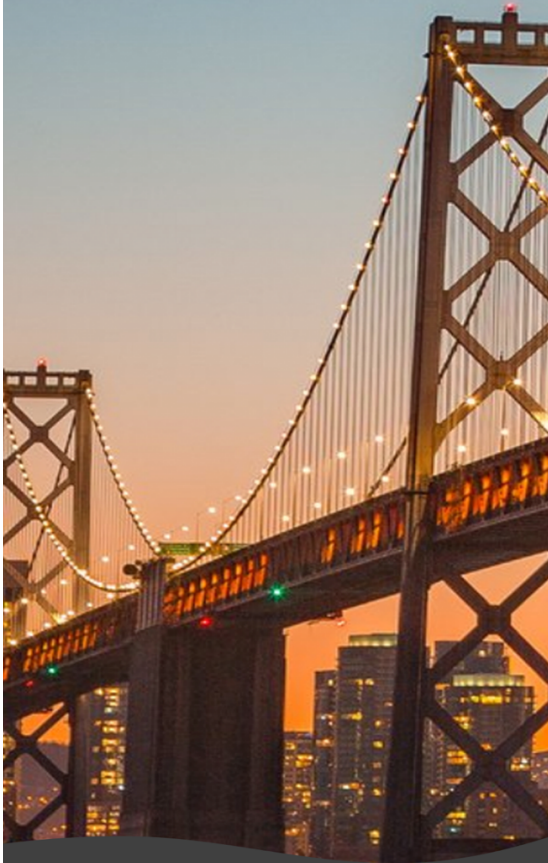
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IEDM is pleased to announce increased  
technical focus in the area of:

## **Reliability of Systems and Devices (RSD)**

### Topics

Papers are solicited in the following themes of interest:

- Component level of FEOL/MEOL/BEOL characterization and reliability modeling
- Robustness and security of electronic circuits and systems
- Reliability of conventional and emerging memories
- Circuits, systems-level reliability, and aging
- Thermal and PID/charging management in existing and novel process integration
- Reliability of RF/mm-wave/5G in high-frequency applications
- Reliability of devices, circuits, and systems for more-than-Moore applications, automotive, aerospace and bio-applications (BioFETs, DNA detection, etc.)
- Reliability of cryogenic devices for future quantum computing applications

New or trending areas include:

- Reliability of new materials and/or new architectures for transistors
- Reliability of advanced 2.5D/3D IC advanced package
- Design for testing (DFT) / Design for reliability (DFR) solutions for improved reliability

### Paper Submission

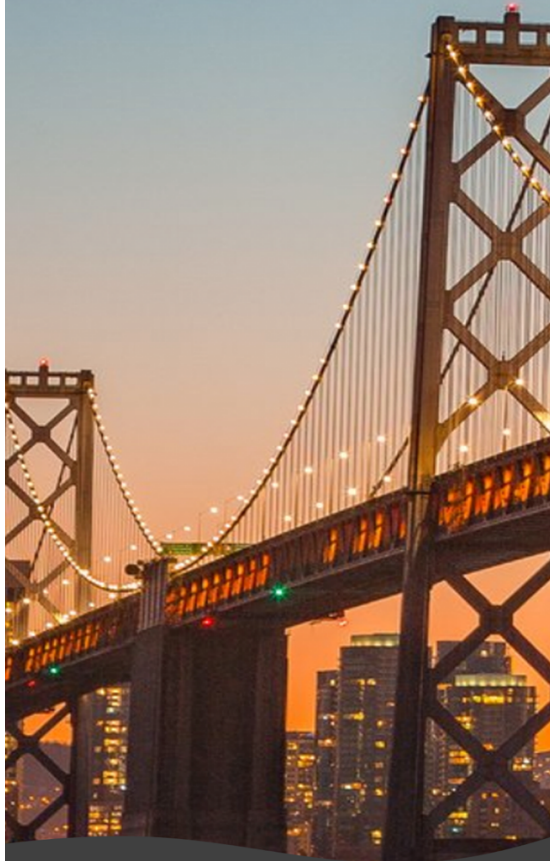
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IEDM is pleased to announce increased  
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## **Sensors, MEMS, and Bioelectronics (SMB)**

### Topics

Papers are solicited in the following themes of interest:

- Physical and biochemical integrated sensors
- Energy harvesting and storage devices
- Flexible devices for wearable applications
- MEMS for Internet of Things
- Bio-electronic interfaces and implantable devices

New or trending areas include:

- Intelligent sensors with embedded AI
- Multimodal biochemical and physical sensors for healthcare
- Sensors and devices for human-machine interface
- Hybrid organic/inorganic microfabrication, devices, and interfaces

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