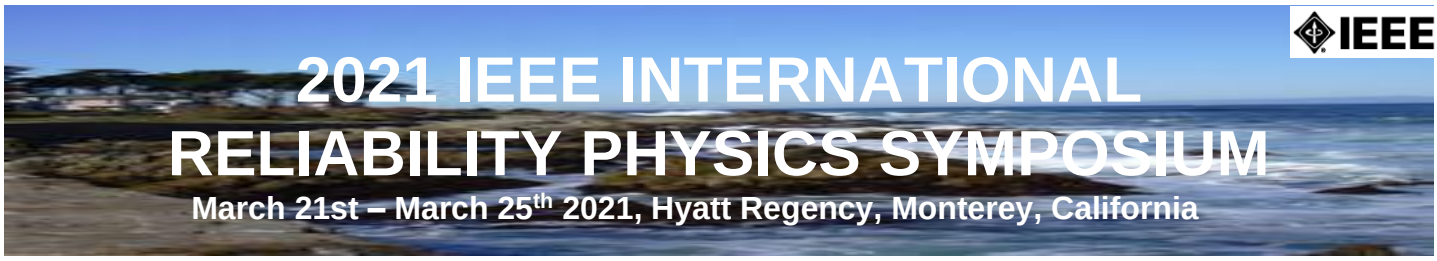

IRPS is the preeminent conference for timely research on Reliability Physics of devices, materials, circuits, and products used in the electronics industry; this is where important reliability challenges and solutions are first discussed.

SPECIAL FOCUS TOPICS

Circuit Reliability and Aging – RAS, self-healing, aging aware designs, design tools
Emerging memory / Neuromorphic Computing– Reliability for PCM, MRAM, RRAM, ferroelectrics
Reliability of RF/mmW/5G Devices – CMOS, SiGe BiCMOS, SOI, GaAs, GaN

Circuits, Products, and Systems

Circuit Reliability and Aging – Includes digital, mixed-signal, power and RF applications; design for reliability; variability-aware design, EDA tools and compact modeling

IC Product Reliability – Includes burn-in; Early Failure Rate; defect detection; on-chip sensors; failure analysis; modeling; product reliability estimation; multichip product; stacked and HBM memory; DFT/DFR solutions for improved reliability; chiplet reliability considerations

System Electronics Reliability – Includes reliability of electronic systems including personal computing, data center, storage, networking, communication, healthcare, automotive, portable devices, space, display and energy; architecture and design methods to manage system reliability including "row hammer" scenarios; system monitoring, modeling and health prognostics; system qualification for reliability including screening techniques and failure root cause determination; extreme temperatures from cryogenic to 150C.

Soft Errors – Includes impact of neutrons, alpha particles, protons and heavy ions on electronics, photonic devices and systems; Device, circuit, system and application level simulation and mitigation techniques for single-bit/multi-bit single event effects in memories and logic.

ESD and Latchup – Includes component and system-level ESD design; modeling and simulation

Packaging and 2.5D/3D Assembly – Includes chip-package interaction; fatigue; power dissipation issues; reliability of 2.5D and 3D IC packaging and TSV integration, interconnects, multichip modules, passive interposers

Reliability Testing – Includes reliability equipment, tools, test structures, and test methods; design for reliability testing

Silicon Photonics – Including reliability of integrated silicon photonics systems

RF/mmW/5G – Reliability of CMOS, BiCMOS, SiGe, SOI, III-V and other devices in high frequency applications

Materials, Processing, and Devices

Transistors – Includes hot carrier phenomena; BTI; RTN; advanced node scaling; variability; Ge and III-V channels; nano-wire, gate all-around, nano-ribbon, fork-sheet devices

Gate/MOL/BEOL Dielectrics – Includes reliability of novel gate dielectrics and ferroelectrics; 2D layered dielectrics and van der Waals dielectrics for 2D materials based devices; modeling of dielectric breakdown; gate dielectric reliability for III-V, Ge, and advanced FETs; middle-of-the-line reliability; MIM/MOM capacitors; low-k dielectric breakdown

Beyond CMOS Devices – Includes reliability of tunnel FETs, transistors with 2D semiconductors (graphene, MoS_2); ferroelectric and negative capacitance FETs; spintronics

Neuromorphic Computing Reliability – Reliability of devices logic and memory (MRAM, RRAM, etc) and design architectures used in neuromorphic computing

Gallium-Nitride and Silicon-Carbide Wide-Bandgap Semiconductors – threshold voltage instabilities, charge trapping, switching stress, breakdown and other reliability topics including thermal issues within power devices.

Compound and Optoelectronic Devices – Includes reliability of III-V-based devices; optoelectronic devices; far infrared detectors

Metallization/BEOL Reliability – Includes electromigration; Joule heating; stress migration;

Process Integration – Includes new process-related reliability issues; foundry reliability challenges

Failure Analysis – Includes evidence of new failure mechanisms; advances in failure analysis techniques

Memory Reliability – Includes stand-alone DRAM and 3DNAND**; emerging memory** devices such as STT MRAM, RRAM, ferroelectrics, and PCM.

MEMS – Includes reliability of sensors and actuators; reliability testing; analysis & modeling; BioMEMS

Abstract (Paper/Poster) Submission due October 23, 2020: Your two-page original abstract submission should clearly and concisely present specific results, and explain the importance of your work in the context of prior work. Use document template available at www.irps.org. Full manuscripts of accepted papers will be due before the conference. Registration for the conference is required for the author presenting the paper.

Late Paper Submission: Full-length manuscripts with significant late breaking news submissions **due January 23, 2021.**

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June 20, 2020