CALL FOR PAPERS

ISQED 2021
22nd International Symposium on QUALITY ELECTRONIC DESIGN

www.isQED.org

April 2021
Santa Clara, CA, USA

AI & Electronic Design, Quantum Computing, Hardware Security, 3D Integration, IoT

The 22nd International Symposium on Quality Electronic Design (ISQED’21) is the leading Electronic IC and System Design conference, aimed at bridging the gap among electronic design tools and processes, integrated circuit technologies, processes & manufacturing, to achieve design quality. ISQED is the pioneer and leading international conference dealing with design for manufacturability and quality issues front-to-back. ISQED emphasizes a holistic approach toward electronic design and intends to highlight and accelerate cooperation among the IC & System Design, EDA, Semiconductor Process Technology and Manufacturing communities. ISQED spans two days, Tuesday through Wednesday, in a number of parallel tracks, hosting over 100 peer-reviewed technical presentations, several keynote speakers, embedded tutorials, embedded summits, and other informal meetings. Past conference proceedings and papers have been published in the IEEE Xplore digital library and indexed by SCOPUS. For any information please contact the publication committee by sending email to isqed2021@gmail.com.

PAPERS ARE ACCEPTED IN THE FOLLOWING AREAS

A pioneer and leading multidisciplinary conference, ISQED accepts and promotes papers in the following areas:

Hardware and System Security
- Attacks and countermeasures including but not limited to side-channel attacks, reverse engineering, tampering, and Trojans
- Hardware-based security primitives including PUFs, TRNGs and ciphers
- Security, privacy, trust protocols, and trusted information flow
- Ensuring trust using untrusted tools, IP, models and manufacturing
- Ensuring trust using doubtful tools, IP, models and manufacturing
- Secure hardware architectures Secure memory systems
- Post-quantum security primitives
- Security challenges and opportunities of emerging nanoscale devices
- IoT and cyber-physical system security
- Any other topics related to hardware security

Electronic Design Automation Tools and Methodologies
- EDA and physical design tools, processes, methodologies, and flows
- Design tools for analysis’ tolerance of variation, aging, and soft-errors
- Design and maintenance of hard and soft IP blocks
- Challenges and solutions of integrating, testing, qualifying and manufacturing IP blocks from multiple vendors
- EDA for non-traditional problems such as smart power grid and solar energy
- EDA tools and methodologies for 3D integrations, and advanced packaging
- Modeling and Simulation of Semiconductor Processes and Devices (TCAD)
- CAD for bio-inspired and neuromorphic systems
- EDA tools, methodologies and applications for Photonics devices, circuit and system design
- EDA for MEMS Any other topics related design automation tools and methodologies

Design for Test and Verification
- Hardware and software formal-, assertion-, and simulation-based design verification techniques
- All areas of DFT, ATE and BIST for digital designs, analog/mixed-signal IC’s, SoC’s, and memories
- Test synthesis and synthesis for testability
- Fault diagnosis, IDDQ test, novel test methods, effectiveness of test methods, fault models and ATPG, and DPPM prediction
- Design methodologies dealing with the link between testability and manufacturing
- SoC/IP testing strategies
- Hardware/software co-verification Advanced methodologies, test-benches, and flows (e.g., UVM, HDLs, HVLs)
- Formal and semi-formal verification and validation techniques
- Safety and security in verification and validation New methods and tools supporting functional safety and security
- Self-checking test-benches in analog verification
- Any other topics related to design test and verification

Emerging Device and Process Technologies and Applications
- Design, simulation and modeling of emerging technologies
- Design, simulation and modeling of emerging non-volatile memory and logic, such as STT-RAM, PC-RAM, R-RAM, and Memristors
- Application of emerging devices for storage and computation including but not limited to cognitive, neuromorphic, or quantum computing
- Qubit technologies and quantum computing Specialty technologies such as MEMs, NEMs
- Novel or emerging solid state nanoelectronic devices and concepts
- Design and Technology Co-Optimization
- Optimization-based methodologies that address the interaction between design (custom, semi-custom, ASIC, FPGA, RF, memory, etc.)
- Advanced-node manufacturing technologies such as multiple patterning, EUV lithography, DSA lithography
- Advanced interconnect (e.g., air gap for local interconnect, Si photonics, etc.)
- Modeling, analysis, and optimization of technology implications on performance metrics like power consumption, timing, area, and cost.
- Design methods and tools to improve yield and manufacturability.
- Any other topics related to emerging device technologies and applications

(continued in the next page)
Any other topics related to cognitive computing hardware

Application driven heterogeneous computing platforms

System level power and thermal management

Test-bed, prototype implementation and applications

HW/SW prototyping and emulation on FPGAs

Design of die-to-die interfaces in 3D/2.5D ICs

Die-package co-design

Any other topics related to circuit design, 3D integration and advanced packaging

System level modeling and simulation to characterize effects of process, voltage, temperature, and aging on power, performance, and reliability

HW/SW co-design, co-simulation, co-optimization, and co-exploration

HW/SW prototyping and emulation on FPGAs

Micro-architectural transformation

System communication architecture

Application driven heterogeneous computing platforms

Network-on-chip design methodologies

Any other topics related to system level design and methodologies

Neuromorphic computing and non-Von Neumann architectures

Hardware and architecture for neural networks and system-level design for (deep) neural computing: Neural network accelerations techniques including GPGPU, FPGA and dedicated ASICs

Safe and secure machine learning Hardware accelerators for Artificial Intelligence Cognitive-inspired computing fundamentals

Cognitive-inspired computing systems

Cognitive-inspired computing with big data

Cognitive-inspired intelligent interaction AI-assisted cognitive computing approaches

Brain analysis for cognitive-inspired computing Internet of cognitive Things

Cognitive environment, sensing and data

Cognitive robots and agents Security issue in cognitive-inspired computing

Test-bed, prototype implementation and applications

Any other topics related to cognitive computing hardware

Submission of Papers

Paper submission must be done on-line through the conference web site: www.isqed.org. The guidelines for the final paper format are provided on the conference web site. Authors should submit original, unpublished papers along with an abstract of about 200 words. The manuscripts should not exceed six (6) pages, should not use smaller than 10pt font size, and must be consistent with the format provided in the conference website: www.isqed.org. The manuscripts longer than 6 pages and/or written in less than 10pt font sizes will not be reviewed. To permit a blind review, do not include name(s) or affiliation(s) of the author(s) on the manuscript and abstract. The complete contact author information needs to be entered separately. The manuscripts identifying the name and/or affiliations of the authors in the submitted manuscript will be rejected without review. Please check the as-printed appearance of your paper before sending your paper. In case of any problems email isqed2021@gmail.com.

Call for Special Sessions

ISQED’21 is soliciting proposals for special sessions from both academia and industry. The proposed special sessions should aim at offering a complementary experience to the regular sessions and are of general interest to the audience of ISQED. For further information, visit the conference website. All special session proposals should be sent to isqed2021@gmail.com.

Work in Progress (WIP) Submission

Ongoing research projects can be presented at ISQED under the Work in Progress (WIP) category. This provides a unique opportunity to authors to receive early feedback on their current work. Authors of accepted WIP papers would be able to present a poster, as well as a brief oral presentation about their work at ISQED. A short version of the paper will also be included in the conference proceedings.

Special issue Journals & Selection Process

Selected papers from ISQED’21 will be invited for submission in the special issues of a number of journals. List of journals will be announced later. The selection process for these special issues will take place after the conference is completed and will be based on reviewer feedback and the quality of the conference presentation.

Important Deadlines

<table>
<thead>
<tr>
<th>Submission Deadline</th>
<th>Oct. 30, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance Notifications</td>
<td>December 17, 2020</td>
</tr>
<tr>
<td>Final Camera-Ready paper</td>
<td>Feb. 7, 2021</td>
</tr>
</tbody>
</table>