

CALL FOR PAPERS
Reliability-aware Design and Analysis Methods for Digital Systems: from Gate to System Level
IEEE Transactions on Emerging Topics in Computing
Special Issue/Section

The continuous scaling of CMOS devices as well as the increased interest in the use of emerging technologies make more and more important the topics related to defect and fault tolerance in digital systems. To address the increasing complexity of digital systems and their challenging reliability requirements, it is imperative to employ design and analysis methods to different levels of the abstraction, starting from the system level down to the gate level. The IEEE Transaction on Emerging Topics in Computing (TETC) seeks original manuscripts for a Special Section on *Reliability-aware Design and Analysis Methods for Digital Systems: from Gate to System Level* scheduled to appear in the March issue of 2018. All aspects of design, manufacturing, test and analysis of systems affected by defects during manufacturing and by faults during system operation are of interest. The relevant topics for this special issue include, but are not limited to:

1. **Yield Analysis and Modeling:** Defect/Fault analysis and models; statistical yield modeling; critical area and metrics.
2. **Design for Testability in IC Design:** FPGA, SoC, NoC, ASIC, microprocessors.
3. **Error Detection, Correction, and Recovery:** Self-testing and self-checking solutions; error-control coding; fault masking and avoidance; recovery schemes, space/time redundancy; hw/sw techniques, architectural-specific techniques, system-level strategies.
4. **Dependability Analysis and Validation:** Fault injection techniques and environments; dependability characterization; aging modeling and analysis.
5. **Repair, Restructuring and Reconfiguration:** Repairable logic; reconfigurable circuit design; DFT for on-line operation; self-healing; reliable FPGA-based systems.
6. **Defect and Fault Tolerance:** Reliable circuit/system synthesis; radiation hardened and/or tolerant processes & design; design space exploration for dependable systems, transient/soft faults and errors; aging management and recovery strategies.
7. **Fail-Safe Design for Critical Applications:** Methodologies and case study applications to automotive, railway, avionics, industrial control, biomedicine, space and smart power networks.
8. **Reliable Systems Designed with Emerging Technologies:** Design techniques for the system composed of CNTs, QCA, DNA, RTDs, SETs, and molecular devices.
9. **Design for Security:** Fault attacks, fault tolerance-based counter-measures, Scan-based attacks and counter-measures, hardware trojans, security vs reliability trade-offs, interaction between VLSI test, trust, and reliability.

Other topics related to reliable and resilient computing.

Submitted articles must not have been previously published or currently submitted for journal publication elsewhere. An extended version of an article appearing in the conference proceedings (and in particular, IEEE DFT 2016) can be submitted provided that it has substantially new content w.r.t. to the original conference version. The conference paper must be cited in the main text and the cover letter must clearly describe the differences with the conference version and clearly identify the new contributions. As an author, you are responsible for understanding and adhering to the submission guidelines. You can access them at the IEEE Computer Society web site, www.computer.org. Please thoroughly read these before submitting your manuscript. Please submit your paper to Manuscript Central at <https://mc.manuscriptcentral.com/tetc-cs>

Please note the following important dates.

Submission Deadline: March 1, 2017

Reviews Completed: June 1, 2017

Major Revisions Due (if Needed): July 1 2017

Reviews of Revisions Completed (if Needed): August 1, 2017

Minor Revisions Due (if Needed): September 1, 2017

Notification of Final Acceptance: November 1, 2017

Publication Materials for Final Manuscripts Due: December 1, 2017

Publication date: First Issue of 2018 (March Issue)

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