

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems
Special Issue on Deep Physical Design Techniques for Next Generation Technologies

Advanced transistor and integration technologies have brought new challenges for physical design automation. Traditional design constraints and objectives have become much more complex. In particular, physical constraints for manufacturability are now significantly more complicated in advanced technology nodes, necessitating new techniques for placement and routing. Similarly, shrinking transistor sizes and interconnects have raised the importance of reliability-aware physical design. FinFET-based cell libraries and stringent power constraints necessitate better algorithms for discrete circuit optimization, and new integration technologies such as 3D stacking require novel techniques for physical design. Apart from that, development efforts are under way for future technologies to continue scaling down beyond 7nm. Some examples are directed self assembly, carbon nanotubes and nanowires, all of which require completely novel techniques for design automation.

The IEEE Transactions on Computer Aided Design of Integrated Circuits and Systems (TCAD) welcomes original contributions that address the issues described above and other related issues with novel approaches like machine learning, statistical methods and other advanced optimization techniques. More specifically, research papers that focus on the following topics in the context of advanced technology nodes are of particular interest:

- Novel automation methodologies based on machine learning and statistics.
- Physical design techniques for advanced manufacturing technologies such as multiple patterning, 3D integration, and directed self assembly.
- Improving variability, reliability, and adaptability through new physical design methodologies.
- Power and performance optimization techniques for advanced technology nodes.
- Addressing the above topics for future transistors and interconnect technologies.

The tentative schedule for the special issue is as follows:

- * Initial submission deadline: July 22, 2016 (extended)
- * First decision: Aug 22, 2016
- * First revision deadline: September 19, 2016
- * Second decision: October 17, 2016
- * Second revision deadline: November 14, 2016
- * Final decision: December 19, 2016
- * Camera-ready manuscript submission deadline: January 9, 2017

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