News

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Best paper award at IEEE Latin-American Test Symposium for IHP researchers!

Frankfurt (Oder) IHP scientists, along with researchers from Brandenburg University of Technology, University of Rostock, and University of Potsdam, won the best paper award at the 26th IEEE Latin American Test Symposium (LATS) 2025, held from March 11-14, in San Andrés Island, Colombia. The LATS is a recognized forum dedicated to presenting and discussing scientific results, emerging ideas, applications, hot topics and new trends in the area of electronic-based circuits and system testing, reliability, and security.

The paper, titled "Cycle-Accurate FPGA Emulation of RRAM Crossbar Array: Efficient Device and Variability Modeling with Energy Consumption Assessment" addresses actual challenges in electronic design automation (EDA). One of the key gaps here is the lack of support for rapid prototyping, design space exploration, and system-level simulations that account for process-dependent device variability. To address this, the joint research between IHP, BTU, Uni Rostock, and Uni Potsdam introduces an FPGA-based emulation approach for RRAM crossbars, enabling real-time, cycle-accurate emulations without complex device models. By leveraging pre-generated look-up tables, the group captures RRAM behavior with high accuracy, while a multivariate kernel density estimation (KDE) method is used to model device variability. This approach enables precise latency determination and, when combined with NeuroSim, allows for energy consumption estimation - offering a significant speedup over traditional behavioral simulations.

Special Congratulations to IHP team: Jianan Wen, Fabian Luis Vargas, Andrea Baroni, Markus Fritscher, Eduardo Perez, Christian Wenger, and Milos Krstic!

The paper can be found here: https://ieeexplore.ieee.org/document/10534601





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About IHP:

The IHP is an institute of the Leibniz Association and conducts research and development of silicon-based systems and ultrahigh frequency circuits and technologies including new materials. It develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, industry 4.0, automotive industry, and aerospace. The IHP employs approximately 400 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with $0.13/0.25 \,\mu m$ SiGe BiCMOS technologies, located in a 1500 m² DIN EN ISO 14644-1 3 certified clean room.

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