

Reliability and Robustness – Design and EDA to the Rescue!

Ulf Schlichtmann

Technische Universität München, Germany

E-mail: ulf.schlichtmann@tum.de

Abstract

Traditionally, Integrated Circuits (ICs) have been designed with the primary goal of minimizing area and thus cost. Performance also was a key issue from quite early on. Later, power became an important design consideration. Of course, optimizing yield always has been an important goal as well.

Reliability of ICs, however, typically was (and still is) handled on technology level. Technology departments and manufacturing ensured the reliability of individual components, resulting in reliable circuits. But as we move to ever smaller geometries, individual devices (transistors and wires) become less reliable. At the same time, the complexity of ICs continues to grow exponentially. These two forces create a strong imperative to focus on design and especially Electronic Design Automation (EDA) in order to ensure reliability and robustness. Recently, cross-layer approaches have started to appear in order to achieve reliability in a cost-efficient manner.

This talk will give an overview about reliability and robustness challenges and discuss recent research activities and results to address reliability and robustness challenges using EDA.