Informationen zur Keynote

The Hype, Myths, and Realities of Testing 2.5D/3D Integrated Circuits

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Abstract: Despite the numerous benefits offered by 2.5D/3D integration, testing remains a major obstacle that hinders its widespread adoption. Concerns related to test cost, yield and reliability continue to derail the commercial exploitation of 2.5D/3D ICs. Test techniques and design-for-testability (DfT) solutions are now being explored in the research community, with considerable focus on probe access for wafers, pre-bond test of passive interposers, test access to modules in stacked dies, cost modeling, and the targeting of new defects arising from unique processing steps in 3D integration. In this talk, the speaker will examine the hype, myths, and realities of 2.5D/3D ICs. He will reflect on some of the over-hyped claims and expose the many myths that have been exposed in recent years. He will present a reality-check on testing and DfT challenges, and describe some of the recent solutions being advocated for these challenges. The key questions to be addressed are: "What to Test? How to Test? When to Test?" To answer these questions, the presentation will cover pre-xbond testing of TSVs and interposers, DfT solutions and optimization for stack testing, and test-flow selection.

Kurzbiografie: Krishnendu Chakrabarty received the B. Tech. degree from the Indian Institute of Technology, Kharagpur, in 1990, and the M.S.E. and Ph.D. degrees from the University of Michigan, Ann Arbor, in 1992 and 1995, respectively. He is now the William H. Younger Distinguished Professor of Engineering in the Department of Electrical and Computer Engineering and Professor of Computer Science at Duke University. Prof. Chakrabarty is a recipient of the National Science Foundation Early Faculty (CAREER) award, the Office of Naval Research Young Investigator award, the Humboldt Research Award from the Alexander von Humboldt Foundation, Germany, the IEEE Transactions on CAD Donald O. Pederson Best Paper award (2015), and 11 best paper awards at major IEEE conferences. He is also a recipient of the IEEE Computer Society Technical Achievement Award (2015) and the Distinguished Alumnus Award from the Indian Institute of Technology, Kharagpur (2014). He is a Research Ambassador of the University of Bremen (Germany). Prof. Chakrabarty's current research projects include: testing and design-for-testability of integrated circuits; digital microfluidics, biochips, and cyberphysical systems; optimization of enterprise systems and smart manufacturing. He is a Fellow of ACM, a Fellow of IEEE, and a Golden Core Member of the IEEE Computer Society. He holds seven US patents, with several patents pending.

Informationen zum Eingeladenen Vortrag

Security & Test – A Major Challenge for Designers

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Abstract: The integration of security and testing features is an essential part of the development process for integrated circuits and modern computing systems. However, these features require the developer to create designs that are compliant to requirements which are inherently conflictive. More precisely, security functions need to securely encapsulate internal details, hiding all secrets

from external inspection by any attacker. Testing features are designed to target exactly the opposite direction, namely granting access to internal states to a (legitimate) tester. This talk highlights a variety of challenges and attacks in recent integrated circuits and systems. It will also discuss limitations and, finally, the consequences for the process of building high-security systems.

Kurzbiografie: Prof. Dr.-Ing. Tim Güneysu ist Leiter der Arbeitsgruppe für Technische Informatik mit dem Schwerpunkt IT-Sicherheit an der Universität Bremen, sowie Brückenprofessor im Bereich Cyber Physical Systems des Deutschen Forschungszentrums für Künstliche Intelligenz (DFKI). Nach Abschluss seines Studiums als Diplom-Ingenieur für „Informationstechnik“ und „Sicherheit in der Informationstechnik“ wurde er zum Doktor-Ingenieur an der Ruhr-Universität Bochum promoviert. Neben Gastaufenthalten an der UMass in Amherst und der Université Jean Monnet in Saint-Etienne war er als Juniorprofessor für Sichere Hardware an der Ruhr-Universität Bochum tätig, bevor er an die Universität Bremen wechselte. Er ist Mitglied des Jungen Kollegs der Akademie der Wissenschaften und Künste NRW, sowie Mitbegründer der Firma SciEngines GmbH, die Supercomputer für kryptanalytische Anwendungen vertreibt.