



Seminar Series Comp. Sci. Dept.



Compressed Sensing Based Through-Silicon-Via Modeling: Balancing the Seesaw of Flexibility and Accuracy

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Feb 14th Tuesday, 12:30 to 1:30pm

Venue - CS 209

Abstract - Through-Silicon-Vias (TSVs) are the critical enabling technique for three-dimensional integrated architectures. Many works exist in literature to model their electrical performance. However, those methods either lack flexibility (only work for fixed geometry) or accuracy. In this talk, a novel approach will be discussed to model the electrical performance of TSV pairs accurately yet flexibly. It is based on compressed sensing, a recent breakthrough in the signal processing society. Experimental results indicate that with an exceptionally small number of samples from full-wave simulation, the proposed model has a maximum relative error of 3.94% over a wide range of geometry parameters and frequencies. To the best of the speaker's knowledge, this is the first effort in literature to apply compressed sensing technique in the CAD modeling society.

Brief Bio - Yiyu Shi is currently an assistant professor in the Electrical and Computer Engineering Department at Missouri University of Science and Technology (formerly University of Missouri, Rolla). His research interests include advanced design and test technologies for 3D ICs, and renewable energy applications. In recognition of his research, five of his papers have been nominated for the Best Paper Award in top conferences (DAC'05, ICCAD'07, ICCD'08, ASPDAC'09, DAC'09). He was also the recipient of the IBM Invention Achievement Award in 2009, and the second placer winner of the TAU power grid analysis contest (sponsored by IBM) in 2011.