

Applications of Asynchronous Circuits

Abstract: Asynchronous circuits are fundamentally different from the prevailing synchronous counterparts. These circuits use local handshaking in lieu of the global clocking to coordinate the circuit behaviors. First proposed in the 1950's, asynchronous circuits have not become popular in most commercial applications due to their inherent drawbacks. However, for certain applications, asynchronous circuits exhibit unmatched advantages over their synchronous counterparts. This talk will introduce the basic principles of asynchronous circuits, discuss their pro's and con's, and identify a series of applications suitable for these circuits. Silicon test results will be presented as solid proof.

Biography: Dr. Jia Di received B.S. and M.S. degrees from Tsinghua University, China, in 1997 and 2000, respectively. He completed his Ph.D. in Electrical Engineering at the University of Central Florida in 2004. He joined the University of Arkansas in Fall 2004, where he is now the Head of Electrical Engineering and Computer Science Department and Rodger S. Kline Endowed Leadership Chair. His research area is asynchronous integrated circuit design and hardware security. His Trustable Logic Circuit Design Lab has been sponsored by various federal agencies and industry for over \$40M in the past twenty two years. Dr. Di has published two books and over 130 papers in technical journals and conferences. He also has 7 U.S. patents. Dr. Di is a senior member of IEEE, an eminent member of Tau Beta Pi, and an elected member of the National Academy of Inventors.