Alexander Fish - Resurgence of Dynamic Logic and Memories: From Nanoscale CMOS to Cryogenic Computing

PRESENTATION ABSTRACT

Static CMOS logic and SRAM memories have dominated chip design for decades. This talk revisits dynamic circuit operation as a promising alternative to static CMOS logic and SRAM. In particular, examples of Dual Mode Logic (DML) for improved speed and energy efficiency, and Gain-Cell embedded DRAM (GCRAM) offering up to 50% area reduction and 10× lower power than SRAM are discussed. In addition, the advantages of cryogenic operation of dynamic circuits in the context of high-performance computing and quantum applications are presented.