

Monday 9<sup>th</sup> April, Noon-1.30pm, FAB155

Title: A Fault-Tolerant Alternative to Lockstep Triple Modular Redundancy

Presenter: W. Robert Daasch, Professor ECE

**Abstract:**

Time distributed voting (TDV) is described as an active fault tolerant technique. TDV addresses the shortcomings of triple modular redundancy (TMR) in the presence of multiple faulty processing elements. Triple modular redundancy (TMR) is a fault tolerant technique commonly used to mask faults using voting outcomes from three processing elements (PE). TMR is effective at masking errors as long as no more than a single processing element is faulty. TDV observes voting outcomes over time to make a statistical decision whether a PE is healthy or faulty. In simulation, fault coverage is extended to 98.6% of multiple faulty PE cases.

**Bio:** Dr. Robert Daasch is a Professor of Electrical and Computer Engineering at Portland State University. He is the founder and Co-Director of the Portland State University Integrated Circuits Design and Test Laboratory. His current research interests are applying statistical methods to digital and analog integrated circuit design and test. Dr. Daasch and his research team received the Semiconductor Research Corporation's Technical Excellence Research Award in 2008 for their research on statistical methods for burn-in reduction.