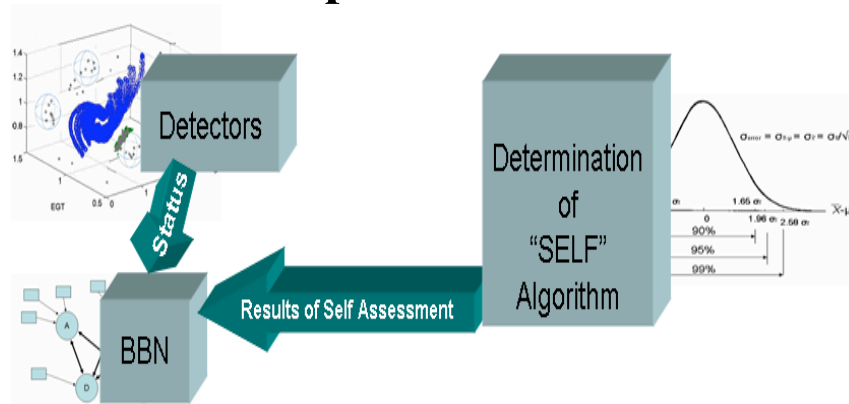


Mathematical Sciences Colloquium Series

**Friday (March 23, 2007)
3:00pm WA 103A**



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2L Research Group

Title: Integrated Networks for Understanding Sensed Environments For Improved Propulsion Test Operations

Abstract:

NASA's Stennis Space Center has initiatives to enhance current capabilities and methods to accurately predict and model characteristics of key components in cryogenic rocket engine test environments for an informed decision framework for test operations personnel. Current modeling tools and techniques need to progress, commensurately, to factor emerging environments for ambitious "test what you fly" campaigns supporting the next generation manned flight programs such as the current ARES program. We are proposing a "False Positive Tolerant" system using our foundational STTR Phase 1 methods for Integrated Networks for Understanding Sensed Environments (INFUSE). This will be developed using:

- Existing engine data and J2X rocket engine models provided by PWR
- A hybrid of key technologies of sound statistically deterministic techniques (Bayesian Belief Networks-BBN with confidence interval methods) coupled with borrowed concepts from the natural human immune system to perform real-time assessment of the sensed environment, supporting man-in-the-loop decisions or other automated systems and supporting posttest analysis for test stand and rocket engine health and status
- Implementation and demonstration on an actual cryogenic testbed.