



## **Christopher M. Elliott**

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### **A Glimpse into Tomorrow's Flight Control Systems and Quantum Inspirations to New Approaches**

#### **Abstract:**

Join this talk for an exploration of recent Skunk Works research into flight control architectures designed to help relax high fidelity modeling requirements, which when not perfected a priori to operation, often lead to expensive iteration in air vehicle development. We will glimpse into model reference adaptive control (MRAC), real time optimization, distributed allocation, and other enabling technologies setting the groundwork for the future of flight controls and vehicle management systems. Finally, a brief look of the Lockheed Martin adiabatic annealing quantum computer will set the precursor for a novel approach to software verification and validation (V&V), an important enabler for the certification of tomorrow's non-deterministic technology.

#### **Biography:**

Dr. Elliott is a subject matter expert in flight controls synthesis, modeling and simulation, and dynamics systems analysis. Subsequent to the F-16 Block 60 Program, he joined the flight controls research team with the Skunk Works and has contributed to Automated Aerial Refueling, the Hybrid Airship program, the Aviation Week Laureate-winning Speed Agile Concept Demonstrator, DARPA ARES, Quantum Inspired V&V, and many other various research efforts including a focus present day on building the future generation flight control architecture by leveraging elements of adaptation and machine learning. Recently, he has focused on a multi-agent method for distributed control allocation using a stochastic optimization reinforcement learning technique referred to as probability collectives.