

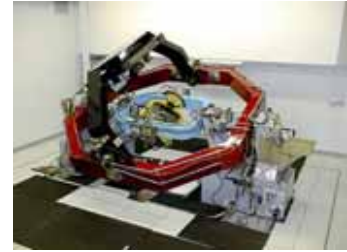
Jam Lab

Overview of Capabilities and Services



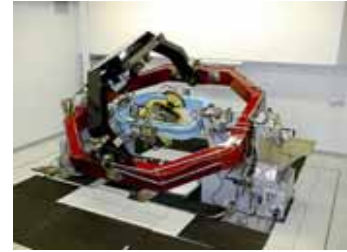
Jam Lab Facilities

- DoD-certified area approved at the Secret security level
- Multiple cleanrooms for investigating Infrared/Electro-Optical systems
 - Multiple 2-axis rate tables
 - Multiple optical tables
 - Various IR/UV sources (lasers, black bodies, arc lamps)
- Real-time 6-degree-of-freedom hardware-in-the-loop simulators
- 5-axis flight motion simulator
 - Three axes of missile/platform angular motion for full hardware-in-the-loop simulation
 - Two additional axes for platform/missile simulation
 - Allows testing of any gimbaled device or devices using gyroscopes
- Wide range of computing resources with classified and unclassified capabilities
- Threat library with more than 4,500 documents



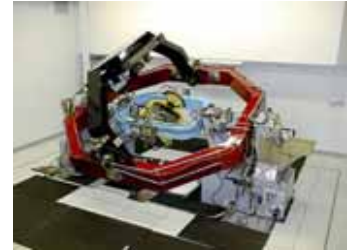
Jam Lab Services

- Open-loop capabilities
 - Effectiveness testing of Infrared Countermeasures (IRCM) concepts
 - Evaluation of missiles, jammers, flares, Infrared Search and Track System (IRST's) and trackers
- High-fidelity hardware-in-the-loop missile model development
 - Detailed threat characterization, exploitation, and analysis capability
 - Several other verified missile models
- Digital missile model capabilities
- Infrared/Electro-Optical missile countermeasure requirements analysis
- Data collection tools provide rapid analysis of simulation results
 - Multiple scoring techniques
- Tools for shadow studies optimize placement of jammers and missile warners
- Countermeasures vulnerability analysis tools aid: Countermeasures system requirements and tradeoff analysis
- Jamming techniques development
- Simulation validation and/or verification
- IR scene generation
 - Includes models that illustrate heat from rocks, buildings, platforms, tarmacs, solar reflections from clouds, etc.
- IR/EO signature measurements of aircraft, missiles, and vehicles



Simulation Capabilities

- Hardware-in-the-loop simulations
 - Real-time six-degrees-of-freedom missile flyout simulators with non-linear aerodynamics
 - Multiple independent sources with shapes
 - Multiple scoring, including aircraft outline
 - Validated and verified simulations for numerous missiles — foreign or domestic
 - Validation to measurements of seeker electronics and seeker operation to live missile firings
 - Real-time graphics for operator aids and demonstration purposes
- Real-time simulators – ensures proper signal processing
 - Incorporate real seeker or emulated missile electronics
- Gyro and reticle models — use multiple, independent sources to present more realistic image-to-missile seeker
 - Models seeker optics and gyro with a fixed reticle
 - Can emulate a wide assortment of reticle models
- Target models
- Simulation software models
 - Georgia Tech. Synthetic Imaging Missiles Simulation / Digital Infrared Seeker And Missile Simulations (GTSIMS/DISAMS) — high-fidelity digital Surface-to-Air Missile (SAM) models
 - Macro Operation Symbolic Assembler and Information Compiler / Digital Infrared Seeker And Missile Simulations (MOSAIC/DISAMS) — high-fidelity digital Air-to-Air Missile (AAM) and SAM missile models
 - Modified Trajectory Analysis Program (MTRAP) — high-fidelity digital AAM models
 - Phillips Laboratory Expert User System (PLEXUS) — Atmospheric effects modeling package for electro-optic systems
- Digital simulation development
 - Digital seeker and system models to functional block and/or component level
 - Models developed in conjunction with hardware seeker measurements
 - Digital models developed for various missiles, air-to-air, anti-tank, surface to-air, etc.



Simulation Verification

- Emulated electronics based on transfer function comparison and schematics compared to component level
- Real electronics based on operation
- Comparison to open-loop seeker operation
- Acceleration (maneuver) capabilities
- Live firing comparisons
- Correlation to other simulators (hardware-in-the-loop and digital)

