Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

AFRL DEMONSTRATES ADVANCED SIMULATION CAPABILITY

AFRL is testing new directed energy weapon (DEW) technology in a virtual computer simulation environment. Scientists are testing the DEW technology without the expense or safety precautions that result from building the weapon and testing it in a real-life situation. Computer simulation eliminates the need to build the weapon and incorporate it into an existing airframe; therefore, AFRL can greatly reduce expenses and eliminate danger that might result from working with powerful lasers in the real world.

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Accomplishment

AFRL demonstrated a computer model of a DEW-equipped tactical aircraft operating in a simulation environment. The laboratory's Tactical High-Energy Laser Utility Study team integrated the DEW model into a simulation environment and evaluated the DEW's ability to destroy incoming threats. Engineers created the DEW model using technology and documentation supplied by AFRL and other government and nongovernment sources.

Background

AFRL's simulation environment is an advanced suite of simulation tools that simulate a real-time, virtual environment. AFRL plans to evolve the simulation so that pilots can interact and manually target threats. Eventually, pilots will manually fly in a simulated engagement of two aircraft against four aircraft.

After conducting an initial engagement utilizing only conventional weapons, engineers will conduct a final combat simulation in which the two-aircraft team will be outfitted with DEW, and the four-aircraft team will remain conventional. This engagement will better assess the DEW's performance against conventionally equipped aircraft.

AFRL is working to improve the simulation, developing new display and control mechanisms to help pilots use the DEW to target threats, while developing power and thermal management subsystems for the aircraft model.

Air Vehicles
Emerging Technologies

Additional Information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (05-VA-10)