

At a Glance

What is it?

■ Free Electron Laser (FEL) provides naval platforms with a highly effective and affordable point defense capability against many surface and air threats, future anti-ship cruise missiles or a swarm of small boats. Utilization of FEL also allows an unlimited magazine with speed-of-light delivery.

How does it work?

■ FEL eliminates the maneuver advantage of the target (i.e., Very high-g ASCM). It is an effective complement to using expensive missiles against high-density, inexpensive targets. Other benefits of this technology include its ability to engage in multiple target engagement with a non-explosive magazine, provide counter-surveillance at sea, flexible defense of battle group, advanced maritime situational awareness and high-resolution imagery with beam director.

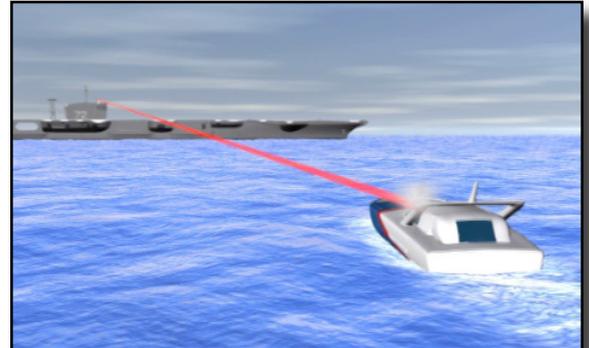
What will it accomplish?

■ FEL will equip U.S. ships with high depth-of-fire with speed-of-light delivery, seconds dwell time, a deep magazine for more powerful means of self-defense. It is a revolutionary gain for the Navy that will transform ship defense.

Point of Contact

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The Navy's future Free Electron Laser (FEL) weapon system is being designed to be game changing. The capability of having speed-of-light delivery for a wide range of missions and threats is a key element of a future shipboard layered defense. The design is to be able to have selectable wavelengths for use at sea.



An Innovative Naval Prototype (INP) program for the FEL technology will begin in FY10. It will demonstrate scalability of the necessary FEL physics and engineering for an eventual megawatt-class device. It will focus on the design, development, fabrication, integration and test of a 100-kW class FEL device. Future needs for ship integration and beam control will be considered.

This revolutionary technology allows for multiple payoffs to the warfighter. The ability to control the strength of the beam provides for graduated lethality, and the use of light vice, an explosive munition, provides for low per engagement and life cycle costs. In fact, it provides an effective alternative to using expensive missiles against low value targets. Not worrying about propulsion and working at the speed of light allows for precise engagement and the resulting low collateral damage. Speed-of-light engagement also allows for a rapid reaction to moving and/or swarming time critical and swarming targets.

Research Opportunities:

- FEL Weapons
- Injectors
- Accelerators
- Amplifier/Oscillator Designs
- Beam Control
- Modeling & Simulation
- Scalability