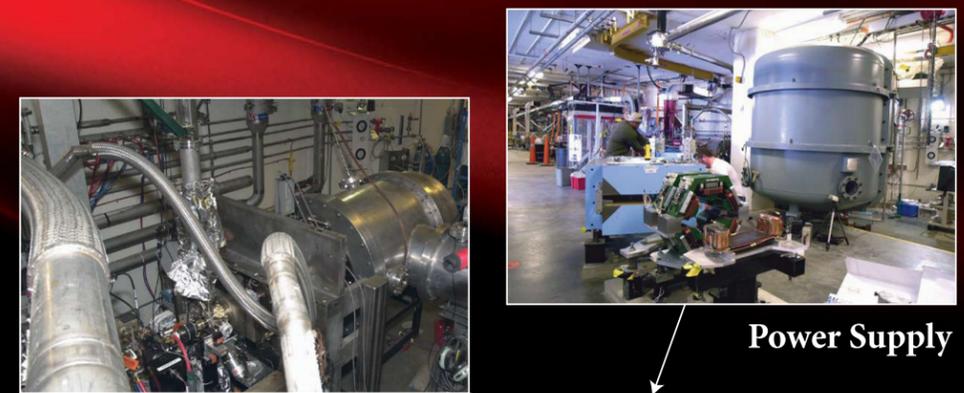


Jefferson Lab

FREE-ELECTRON LASER

The Free-Electron Laser, the world's most-powerful tunable laser, is based on Jefferson Lab's expertise in superconducting radiofrequency accelerators. The FEL uses electrons to produce laser light, which can be tuned to precise colors or wavelengths, providing significant advantages compared to conventional lasers. The FEL is unique in that it recovers and re-uses the remainder of the electrons' energy using a superconducting energy-recovering linac, or ERL.



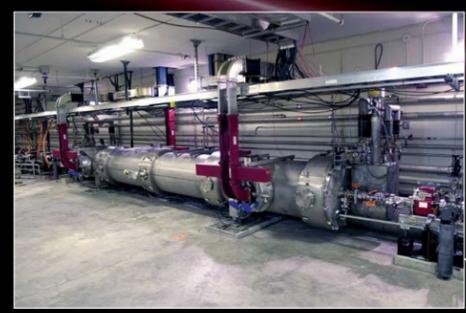
Power Supply



Injector



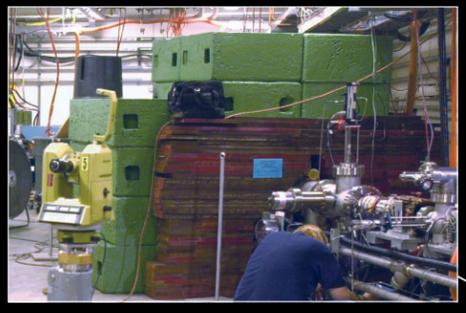
Recirculation Arc



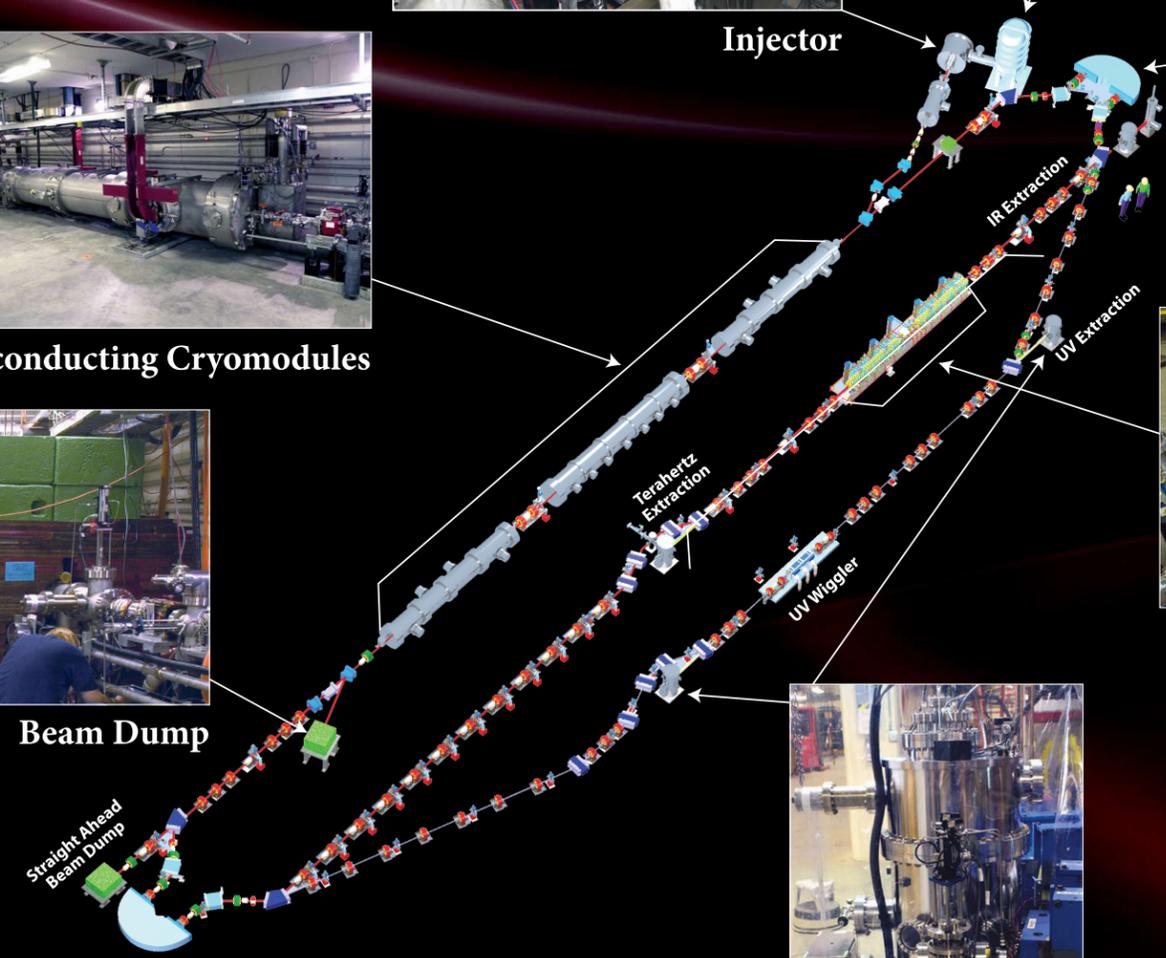
Superconducting Cryomodules



Infrared Wiggler



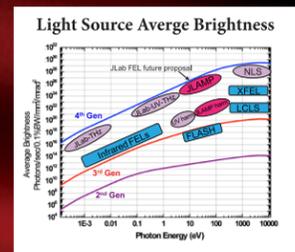
Beam Dump



ENERGY-RECOVERING LINAC



Infrared Optical Mirror Can



FEL Parameters	
	UV Upgrade
Electron Energy	160 MV
Electron Current	10 mA
Laser Wavelength	1-14 μm, 200-1000 nm
Laser Pulse Energy	100 μJ, 10 μJ
Pulse Width	300 fs
Laser Power	10 kW, 1 kW

MV = megavolt, mA = milliamp, μm = micron, μJ = microjoule, kW = kilowatt