

# Scientific Assessment of High-Power Free-Electron Laser Technology



This book presents a scientific assessment of free-electron-laser technology for naval applications. The charge from the Office of Naval Research was to assess whether the desired performance capabilities are achievable or whether fundamental limitations will prevent them from being realized. The present study identifies the highest-priority scientific and technical issues that must be resolved along the development path to achieve a megawatt-class free-electron laser. In accordance with the charge, the committee considered (and briefly describes) trade-offs between free-electron lasers and other types of lasers and weapon systems to show the advantages free-electron lasers offer over other types of systems for naval applications as well as their drawbacks. The primary advantages of free-electron lasers are associated with their energy delivery at the speed of light, selectable wavelength, and all-electric nature, while the trade-offs for free-electron lasers are their size, complexity, and relative robustness. Also, Despite the significant technical progress made in the development of high-average-power free-electron lasers, difficult technical challenges remain to be addressed in order to advance from present capability to megawatt-class power levels.

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Developing laser technologies for high average power (tens to hundreds of kilowatts), ultra-short .. even compact accelerators to drive free electron lasers. [4,5]. **Scientific Assessment of High-Power Free-Electron Laser Technology Scientific Assessment of High-Power Free-Electron Laser Technology** Scientific Assessment of High-Power Free-Electron Laser Technology (2009). Chapter: Appendix B: Committee Meeting Agendas. Get This Book. Unfortunately **Executive Summary Scientific Assessment of High-Power Free** Nov 1, 2010 - 59 min - Uploaded by SETI InstituteFree Electron Laser Communications - Bill Colson (SETI Talks) Scientific Assessment of **Emittance measurements of electron beams from diamond field** Laser Radar: Progress and Opportunities in \$75.00 Cover Image: Scientific Assessment of High-Power Free-Electron Laser Technology **Scientific Assessment of High-Power Free-Electron Laser Technology** Suggested Citation: Appendixes. National Research Council. 2009. 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