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Systems Development; 1.4#Aim of the Book ; 1.5#Organisation of the Book; References ; Selected Bibliography; 2.1#Introduction; 2.2#Laser Classification; 2.3#Laser Action and Stimulated Emission; 2.4 #Oscillators and Amplifiers; 2.5#Beam Generation and Its Control; 2.6 #Other Laser Components; 2.7#Direct and Indirect Wavelength Generation; 2.8#Performance Characteristic Terms and Parameters; 2.9 #Summary; Selected Bibliography; 3.1#Introduction. 3.2#Military Laser-System Considerations3.3#Laser-System Specifications and Requirements Definition; 3.4#Solid-State Lasers; 3.5 #Fibre Lasers; 3.6#Disk Lasers; 3.7#Vibronic Lasers; 3.8#Liquid-Phase Lasers; 3.9#Gas-Phase Lasers ; 3.10#Semiconductor Lasers; 3.11#Free-Electron Laser; 3.12#Cryogenic Lasers; 3.13#Cannon Lasers ; 3.14 #Super-Continuum Lasers; 3.15#Waveguide Lasers; 3.16#Laser Performance Summary; 3.17#Summary; Selected Bibliography; 4.1 #Introduction; 4.2#Design Considerations for Beam Directors; 4.3 #Generic Beam-Director/Pointer System for Directed-Energy Systems. 4.4#Threat-Alerting System4.5#Target-Tracking Subsystem; 4.6 #Pointing Element; 4.7#Target Sight-Line Stabilisation; 4.8#System Processor; 4.9#Other Functions; 4.10#Video Processor; 4.11#Power Supply; 4.12#Environmental Cover; 4.13#Laser-Integration Requirements; 4.14#Generic Beam-Director System for Laser-Based Sensing Systems; 4.15#Advanced Beam-Steering Techniques; 4.16 #Summary; Selected Bibliography; 5.1#Introduction; 5.2#The Earth's Atmosphere; 5.3#Beam-Attenuation Mechanisms; 5.4#Atmospheric Transmission; 5.5#Models for Prediction of Transmission; 5.6 #Turbulence; 5.7#Thermal Blooming.

Sommario/riassunto

This new resource provides an insight into the physical principles of the device technology that underpins many laser-based military systems in one form or another. From this knowledge a deeper understanding of the fundamental requirements and the potential performance, as well as limitations of such systems may be assessed, given the appropriate operational parameters. Engineers and students are provided with practical advice on how to evaluate laser devices and systems, operate them safely, and train with them.
