

Fundamentals and Engineering
Christopher C. Davis

ASME 1126

This comprehensive textbook provides a detailed introduction to the basic physics and engineering aspects of lasers, as well as to the design and operational principles of a wide range of optical systems and electro-optic devices. Throughout, full details of important derivations and results are given, as are many practical examples of the design, construction, and performance characteristics of different types of lasers and electro-optic devices.

The first half of the book deals with the fundamentals of laser physics, the characteristics of laser radiation, and discusses individual types of laser, including optically-pumped insulating crystal lasers, atomic gas lasers, molecular gas lasers, and semiconductor lasers. The second half deals with topics such as optical fibers, electro-optic and acousto-optic devices, the fundamentals of nonlinear optics, parametric processes, phase conjugation and optical bistability. The book concludes with chapters on optical detection, coherence theory, and the applications of lasers.

Covering a broad range of topics in modern optical physics and engineering, this book will be invaluable to those taking undergraduate courses in laser physics, optoelectronics, photonics, and optical engineering. It will also act as a useful reference for graduate students and researchers in these fields.

Lasers and Electro-Optics

Fundamentals and Engineering

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Contents

<i>Preface</i>	xix
1 Spontaneous and Stimulated Transitions	1
1.1 Introduction	1
1.2 Why 'Quantum' Electronics?	1
1.3 Amplification at Optical Frequencies	3
1.3.1 Spontaneous Emission	4
1.3.2 Stimulated Emission	6
1.4 The Relation Between Energy Density and Intensity	7
1.4.1 Stimulated Absorption	10
1.5 Intensity of a Beam of Electromagnetic Radiation in Terms of Photon Flux	11
1.6 Black-Body Radiation	11
1.7 Relation Between the Einstein <i>A</i> and <i>B</i> Coefficients	16
1.8 The Effect of Level Degeneracy	18
1.9 Ratio of Spontaneous and Stimulated Transitions	19
1.10 Problems	20
2 Optical Frequency Amplifiers	22
2.1 Introduction	22
2.2 Homogeneous Line Broadening	22
2.2.1 Natural Broadening	22
2.3 Inhomogeneous Broadening	26
2.3.1 Doppler Broadening	27
2.4 Optical Frequency Amplification with a Homogeneously Broadened Transition	30
2.4.1 The Stimulated Emission Rate in a Homogeneously Broadened System	33
2.5 Optical Frequency Amplification with Inhomogeneous Broadening Included	34
2.6 Optical Frequency Oscillation – Saturation	35
2.6.1 Homogeneous Systems	35
2.6.2 Inhomogeneous Systems	38
2.7 Power Output from a Laser Amplifier	44
2.8 The Electron Oscillator Model of a Radiative Transition	45
2.9 What Are the Physical Significances of χ' and χ'' ?	49
2.10 The Classical Oscillator Explanation for Stimulated Emission	52
2.11 Problems	54

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