Fundamentals and Engineering

Christopher C. Davis

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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.

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Lasers and Electro-Optics

Fundamentals and Engineering

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