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Nota di contenuto	Overview of the Operating Principles of Lasers -- The Photon -- Laser Oscillation -- Waveguides -- Density Matrix of a Semiconductor Material -- Gain Coefficient and Rate Equation -- Typical Operating Characteristic -- Nonlinear Gain -- Mode Competition -- Noise -- Quantum Well Structure -- Distributed Feedback and Mode Selective Lasers -- Surface Emitting Lasers.
Sommario/riassunto	This book provides a unified and complete theory for semiconductor lasers, covering topics ranging from the principles of classical and quantum mechanics to highly advanced levels for readers who need to analyze the complicated operating characteristics generated in the real

application of semiconductor lasers. The author conducts a theoretical analysis especially on the instabilities involved in the operation of semiconductor lasers. A density matrix into the theory for semiconductor lasers is introduced and the formulation of an improved rate equation to help understand the mode competition phenomena which cause the optical external feedback noise is thoroughly described from the basic quantum mechanics. The derivation of the improved rate equation will allow readers to extend the analysis for the different types of semiconductor materials and laser structures they deal with. This book is intended not only for students and academic researchers but also for engineers who develop lasers for the market, as the advanced topics covered are dedicated to real problems in implementing semiconductor lasers for practical use.