1. Record Nr. UNINA9910457297603321 Autore Abramczyk Halina **Titolo** Introduction to laser spectroscopy [[electronic resource] /] / Halina Abramczyk Amsterdam;; Boston,: Elsevier, 2005 Pubbl/distr/stampa **ISBN** 1-280-62176-1 9786610621767 0-08-045525-5 Edizione [1st ed.] Descrizione fisica 1 online resource (331 p.) Disciplina 535.8/4 Soggetti Laser spectroscopy Spectrum analysis Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Includes bibliographical references and index. Nota di bibliografia Nota di contenuto copyright; front matter; Acknowledgements; Preface; table of contents; body; 1. Basic Physics of Lasers; 1.1. SPONTANEOUS AND STIMULATED TRANSITIONS. EINSTEIN COEFFICIENTS. PROPERTIES OF STIMULATED RADIATION: 1.2. LASER OPERATION BASICS: 1.3. POPULATION INVERSION; 1.4. AMPLIFICATION AND SATURATION; REFERENCES 1; 2. Distribution of the Electromagnetic Field in the Optical Resonator; 2.1. LONGITUDINAL MODES; 2.2. QUALITY FACTOR OF RESONATOR RELATIONSHIP BETWEEN LINEWIDTH OF STIMULATED EMISSION AND RESONATOR QUALITY FACTOR; 2.3. TRANSVERSE MODES; REFERENCES 3. Generation of Ultrashort Laser Pulses 3.1. MODELOCKING. RELATIONSHIP BETWEEN LINE WIDTH OF STIMULATED EMISSION AND PULSE DURATION: 3.2. METHODS OF MODELOCKING. ACTIVE AND PASSIVE MODELOCKING; 3.3. Q-SWITCHING; 3.4. CAVITY DUMPING; REFERENCES 3; 4. Lasers; 4.1. RUBY LASER; 4.2. MOLECULAR GAS LASERS FROM THE INFRARED REGION; 4.2.1. Lasers Operating on

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## Sommario/riassunto

Introduction to Laser Spectroscopy is a well-written, easy-to-read guide to understanding the fundamentals of lasers, experimental methods of modern laser spectroscopy and applications. It provides a solid grounding in the fundamentals of many aspects of laser physics, nonlinear optics, and molecular spectroscopy. In addition, by comprehensively combining theory and experimental techniques it explicates a variety of issues that are essential to understanding broad areas of physical, chemical and biological science. Topics include key laser types - gas, solid state, and semiconductor -