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| Nota di contenuto | 1. Air laser-based coherent Raman spectroscopy: principle and application -- 2. Intense terahertz pulses from two-color femtosecond laser filamentation for near-field optical microscopy -- 3. THz nonlinear effects using nano-slit antenna -- 4. Ultrafast harmonic generation from plasmon resonant metal-dielectric interfaces: contribution of bound and hot electrons -- 5. Ultrafast dynamics of elementary excitations in a semiconductor gallium arsenide -- 6. Photoionization of aromatic chromophores in aqueous medium by near-UV single photon absorption -- 7. Generation of optical Schrödinger "cat" states using intense laser-matter interactions and applications in non-linear optics -- 8. Coherent light-matter |

interactions driven by intense XUV pulses from seeded FELs -- 9. Ion acceleration and neutron generation at high repetition rate -- 10. The focus of an ultraintense laser pulse -- 11. Four-wave-mixing in the vacuum - toward search for something dark in the Universe matter.

Sommario/riassunto

This book delivers up-to-date reviews of progress in ultrafast intense laser science, an expanding interdisciplinary research field spanning atomic and molecular physics, molecular science, solid state physics, and optical science, which has been stimulated by the recent developments in ultrafast laser technologies. Each volume compiles peer-reviewed articles authored by researchers at the forefront of their own subfields of ultrafast intense laser science. Every chapter opens with an overview of the topics to be discussed, so that researchers unfamiliar to the subfield, as well as graduate students, can grasp the importance and attractions of the research topic at hand; these are followed by reports of cutting-edge discoveries. The eighteenth volume covers a broad range of topics from this interdisciplinary research field, focusing on molecular photoionization, atoms and molecules in intense laser fields, excitation processes in intense laser fields, photonics and materials, high-order harmonics generation, light-matter interaction, XFEL and high-power lasers, and quantum computing.
