

1. Record Nr.	UNINA9910300540403321
Titolo	Air Lasing // edited by Pavel Polynkin, Ya Cheng
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-65220-6
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XII, 143 p. 107 illus., 95 illus. in color.)
Collana	Springer Series in Optical Sciences, , 0342-4111 ; ; 208
Disciplina	551.50287
Soggetti	Lasers Photonics Spectroscopy Atmospheric sciences Optics Electrodynamics Remote sensing Atoms Physics Optics, Lasers, Photonics, Optical Devices Spectroscopy/Spectrometry Atmospheric Sciences Classical Electrodynamics Remote Sensing/Photogrammetry Atoms and Molecules in Strong Fields, Laser Matter Interaction
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Preface -- 1 Diagnostic properties of two-photon pumped stimulated emission in atmospheric species -- 2 High-gain air lasing by multi-photon pumping of atomic species -- 3 The role of electron collisions in lasing in neutral and singly ionized molecular nitrogen -- 4 Molecular rotational effects in free-space N <sub>2</sub> <sup>+</sup> lasers induced by strong-field ionization -- 5 Filament-initiated lasing in neutral molecular nitrogen -- 6 Filament-assisted impulsive Raman spectroscopy -- Index.

This book presents the first comprehensive, interdisciplinary review of the rapidly developing field of air lasing. In most applications of lasers, such as cutting and engraving, the laser source is brought to the point of service where the laser beam is needed to perform its function. However, in some important applications such as remote atmospheric sensing, placing the laser at a convenient location is not an option. Current sensing schemes rely on the detection of weak backscattering of ground-based, forward-propagating optical probes, and possess limited sensitivity. The concept of air lasing (or atmospheric lasing) relies on the idea that the constituents of the air itself can be used as an active laser medium, creating a backward-propagating, impulsive, laser-like radiation emanating from a remote location in the atmosphere. This book provides important insights into the current state of development of air lasing and its applications.

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