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Nota di contenuto	Nonlinear optical beams in nanodisordered photorefractive ferroelectrics -- Microscopy -- Miniaturized photogenerated electro-optic axicon lens Gaussian-to-Bessel beam conversion -- Diraction-free light droplets for axially-resolved volume imaging -- Self-suppression of Bessel beam side lobes for high-contrast light sheet microscopy -- Microscopic reversibility, nonlinearity, and the conditional nature of single particle entanglement -- Super-crystals in composite ferroelectrics -- Intrinsic negative-mass from nonlinearity -- Rogue waves: transition to turbulence and control through spatial incoherence -- Appendix.
Sommario/riassunto	This book reports new findings in the fields of nonlinear optics, quantum optics and optical microscopy. It presents the first

experimental device able to transform an input Gaussian beam into a non-diffracting Bessel-like beam. The modulation mechanism, i.e. electro-optic effect, allows the device to be fast, miniaturizable and integrable into solid state arrays. Also presented is an extensive study of the superposition of Bessel beams and their propagation in turbid media, with the aim of realizing field that is both localized and non-diffracting. These findings have been implemented in a light-sheet microscope to improve the optical sectioning. From a more theoretical point of view this work also tackles the problem of whether and how a single particle is able to entangle two distant systems. The results obtained introduce fundamental limitations on the use of linear optics for quantum technology. Other chapters are dedicated to a number of experiments carried out on disordered ferroelectrics including negative intrinsic mass dynamics, ferroelectric supercrystals, rogue wave dynamics driven by enhanced disorder and first evidence of spatial optical turbulence. .