

1. Record Nr.	UNINA9910458090003321
Autore	Mollenauer L. F (Linn Frederick), <1937->
Titolo	Solitons in optical fibers [[electronic resource]] : fundamentals and applications / / Linn F. Mollenauer and James P. Gordon
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier/Academic Press, c2006
ISBN	1-281-18662-7 9786611186623 0-08-046506-4
Descrizione fisica	1 online resource (298 p.)
Altri autori (Persone)	GordonJames P
Disciplina	621.36/92
Soggetti	Optical fibers Solitons Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 261-270) and index.
Nota di contenuto	Front cover; Solitons in Optical Fibers; Copyright Page; About the Authors; Contents; Preface; The Nonlinear Schrodinger Equation and Ordinary Solitons; Introduction; Fiber Dispersion and Nonlinearity; The NLS Equation: Derivation and Fundamental Consequences; The Soliton; Dispersion-managed Solitons; Introduction; Pulse Behavior in Maps Having Gain and Loss; Map Scaling to Higher Bit Rates; Dispersion-managed Solitons: Summary; Spontaneous Emission and Its Effects; Some Basic Concepts; Optical Amplifiers; ASE Growth in a Chain of Amplifiers and Fiber Spans; ASE-induced Errors Frequency-guiding FiltersSoliton Interactions; Soliton-soliton Collisions in WDM; Applications of the Inverse Scattering Transform; Wavelength Division Multiplexing with Ordinary Solitons; Introduction; Effects of Periodic Loss and Variable Dispersion; Analytical Theory of Collisions in Perturbed Spans; Dispersion-tapered Fiber Spans; Pseudo Phase Matching of Four-wave Mixing in WDM; Control of Collision-induced Timing Displacements; Effects of Polarization; Gain Equalization with Guiding Filters; Experimental Con.rmation; Wavelength Division Multiplexing with Dispersion- managed Solitons Soliton-soliton CollisionsExperimental Tests; Polarization and Its

Effects; Apologia; Polarization States and the Stokes-Poincare Picture; Linear Birefringence of Transmission Fibers; Soliton Propagation; Polarization Scattering by Soliton-soliton Collisions; Hardware and Measurement Techniques; Soliton Sources; The Temporal Lens; Clock Recovery; Dispersion Measurement; Accurate Measurement of Pulse Widths Using a Detector with Finite Response Time; Flat Raman Gain for Dense WDM; A Sample Maple Program for the ODE Method; A.1. Introduction; A.2. The Maple Program; A Brief History of Solitons B.1. ApologiaB.2. The Beginning: John Scott Russell and His Discovery; B.3. Solitons in Optical Fibers; B.4. The Soliton Legacy; References; Index

Sommario/riassunto

Solitons are waves that retain their form through obstacle and distance. Solitons can be found in hydrodynamics, nonlinear optics, plasma physics, and biology. Optical solitons are solitary light waves that hold their form over an expansive interval. Conservation of this form creates an effective model for long distance voice and data transmission. The application of this principle is essential to the technology of wired communications. Optical solitons produce crystal clear phone calls cross-country and internationally. It is because of these that someone on the other end of the phone
