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Introduction to Non-Kerr Law Optical Solitons (Hardback)

By Anjan Biswas, Swapan Konar

Taylor Francis Inc, United States, 2006. Hardback. Condition: New. Language: English . Brand New Book. Despite remarkable developments in the field, a detailed treatment of non-Kerr law media has not been published. Introduction to non-Kerr Law Optical Solitons is the first book devoted exclusively to optical soliton propagation in media that possesses non-Kerr law nonlinearities. After an introduction to the basic features of fiber-optic communications, the book outlines the nonlinear Schrodinger equation (NLSE), conserved quantities, and adiabatic dynamics of soliton parameters. It then derives the NLSE for Kerr law nonlinearity from basic principles, the inverse scattering transform, and the 1-soliton solution. The book also explains the variational principle and Lie transform. In each case of non-Kerr law solitons, the authors develop soliton dynamics, evaluated integrals of motion, and adiabatic dynamics of soliton parameters based on multiple-scale perturbation theory. The book explores intra-channel collision of optical solitons in both Hamiltonian and non-Hamiltonian type perturbations. In addition, it examines the stochastic perturbation of optical solitons, the corresponding Langevin equations, and optical couplers, followed by an introduction to optical bullets. Establishing a basis in an important yet insufficiently documented subject, Introduction to non-Kerr Law Optical Solitons will help fuel advances in optical communication...



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