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	Titolo	Nonlinear Waves : From Dissipative Solitons to Magnetic Solitons / / by Emmanuel Kengne, WuMing Liu
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	ISBN	981-19-6744-X
	Edizione	[1st ed. 2022.]
	Descrizione fisica	1 online resource (525 pages)
	Disciplina	780
	Soggetti	Mathematical physics Condensed matter Nonlinear optics Mathematical Methods in Physics Mathematical Physics Condensed Matter Physics Nonlinear Optics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Nonlinear Schrödinger models for solitons propagation in 1D lossless nonlinear transmission networks (NLTNs) -- Transmission of dissipative soliton like signals through one-dimensional transmission networks -- Emission of rogue wave signals in nonlinear electrical transmission networks -- Emission of nonlinear modulated waves in multi-coupled nonlinear transmission networks -- Dynamics of one-dimensional condensates with time modulation of the scattering length and trapping potential -- Rogue matter waves in Bose-Einstein condensates trapped in time-varying external potentials -- Dynamics of matter-wave solitons in multi-component Bose-Einstein condensates -- Dynamics of higher-dimensional condensates with time modulated nonlinearity -- Engineering matter-wave solitons in spinor Bose-Einstein condensates -- Engineering magnetic solitons in nonlinear systems -- Current driven dynamics of magnetization in ferromagnet with spin-transfer torque.
	Sommario/riassunto	This book highlights the methods to engineer dissipative and magnetic nonlinear waves propagating in nonlinear systems. In the first part of

the book, the authors present methodologically mathematical models of nonlinear waves propagating in one- and two-dimensional nonlinear transmission networks without/with dissipative elements. Based on these models, the authors investigate the generation and the transmission of nonlinear modulated waves, in general, and solitary waves, in particular, in networks under consideration. In the second part of the book, the authors develop basic theoretical results for the dynamics matter-wave and magnetic-wave solitons of nonlinear systems and of Bose–Einstein condensates trapped in external potentials, combined with the time-modulated nonlinearity. The models treated here are based on one-, two-, and three-component non-autonomous Gross–Pitaevskii equations. Based on the Heisenberg model of spin–spin interactions, the authors also investigate the dynamics of magnetization in ferromagnet with or without spin-transfer torque. This research book is suitable for physicists, mathematicians, engineers, and graduate students in physics, mathematics, and network and information engineering.