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Nota di contenuto	Preface; Contents; 1. Basic concepts; 1.1 Single nonlinear waves of permanent shape; 1.2 Formation of nonlinear waves of permanent shape from an arbitrary input; 1.3 Amplification attenuation and selection of nonlinear waves; 2. Mathematical tools for the governing equations analysis; 2.1 Exact solutions; 2.2 Asymptotic solutions; 2.3 Numerical methods; 2.4 Use of Mathematica; 3. Strain solitary waves in an elastic rod; 3.1 The sources of nonlinearities; 3.2 Modelling of nonlinear strain waves in a free lateral surface elastic rod; 3.3 Double-dispersive equation and its solitary wave solution 3.4 Observation of longitudinal strain solitary waves 3.5 Reflection of solitary wave from the edge of the rod; 4. Amplification of strain waves in absence of external energy influx; 4.1 Longitudinal strain solitary wave amplification in a narrowing elastic rod; 4.2 Strain solitary waves in an elastic rod embedded in another elastic external medium with sliding; 4.3 Strain solitary waves in an elastic rod with microstructure; 5. Influence of dissipative (active) external medium; 5.1 Contact problems: various approaches

5.2 Evolution of bell-shaped solitary waves in presence of active/ dissipative external medium; 5.3 Strain kinks in an elastic rod embedded in an active/ dissipative medium; 5.4 Influence of external tangential stresses on strain solitary waves evolution in a nonlinear elastic rod; 6. Bulk active or dissipative sources of the amplification and selection; 6.1 Nonlinear bell-shaped and kink-shaped strain waves in microstructured solids; 6.2 Nonlinear seismic solitary waves selection; 6.3 Moving defects induced by external energy flux; 6.4 Thermoelastic waves; Bibliography; Index

Sommario/riassunto

This book treats two problems simultaneously: sequential analytical consideration of nonlinear strain wave amplification and selection in wave guides and in a medium; demonstration of the use of even particular analytical solutions to nonintegrable equations in a design of numerical simulation of unsteady nonlinear wave processes. The text includes numerous detailed examples of the strain wave amplification and selection caused by the influence of an external medium, microstructure, moving point defects, and thermal phenomena. The main features of the book are: (1) nonlinear models of the stra
