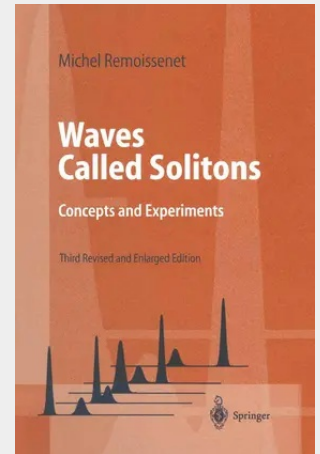


Waves Called Solitons

Concepts and Experiments

In the third edition the presentation of new topics has been deliberately kept simple for pedagogical purposes. Chapter 1 was completed by references to the tidal bore and magnetic envelope solitons. Two new sections devoted to magnetic envelope solitons and signal processing with solitons have been added to Chap. 4. Short comments on models describing blood-pressure pulse propagation in terms of solitons were added to chapter 5. A description of a new mechanical transmission line with two equilibrium states has been included in Chap. 6. Such an analog device is useful to illustrate the properties of kink-solitons and to observe solitary waves with a compact shape, called compactons. New references concerning recent advances in experimental techniques and lattice effects were added to Chap. 7. In Chap. 8 a short introduction to spatial optical solitons in continuous and discrete systems was included. Chapter 9 was completed by new sections devoted to nonlinear lattice models and energy localization. The concepts of self-trapped states and intrinsic localized modes or discrete breathers are discussed. Different analog chains which make it possible to observe the characteristic features of discrete breathers, are described. Contrary to previous chapters where we have considered reversible or conservative systems where solitons can exist owing to the dynamical balance between linear dispersion and nonlinearity, Chapter 11 which is a new chapter, is devoted to irreversible systems where nonlinearity can balance the effects of dissipation leading to "diffusing solitary waves" or "diffusive solitons".

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