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**Zbl 1111.37001**

**Faddeev, Ludwig D.; Takhtajan, Leon A.** (Takhtadzhyan, Leon A.)

**Hamiltonian methods in the theory of solitons. Transl. from the Russian by A. G. Reyman. Reprint of the 1987 original.** (English)

Classics in Mathematics. Berlin: Springer. xiv, 592 p. EUR 39.95/net; SFR 65.50; \$ 59.95; £ 30.50 (2007). ISBN 978-3-540-69843-2/pbk

This is a reprint of the original 1987 edition (see Zbl 0632.58004). The Russian original was reviewed in Zbl 0632.58003.

This fantastic book definitely deserves to be included in Springer's Classics in Mathematics series as it represents a milestone in dynamical systems literature.

For convenience of the readers who are not aware of this book yet, we give the table of contents:

Part I. Nonlinear Schrödinger equation. Chapter 1. Representation of zero curvature. Chapter 2. Riemann problem. Chapter 3. Hamiltonian formulation.

Part II. General theory of integrable evolution equations. Chapter 1. Main examples and their general properties. Chapter 2. Fundamental continuous models. Chapter 3. Fundamental models on a lattice. Chapter 4. Lie-algebraic approach to the classification and investigation of integrable models.

*Olaf Ninnemann (Berlin)*

*Keywords* : Hamiltonian systems; inverse scattering; nonlinear Schrödinger equation; sine-Gordon equation; Heisenberg equation; Toda lattice; Riemann problem; evolution equations; integrable models

*Classification* :

\***37-02** Research exposition (Dynamical systems and ergodic theory)

**37K15** Integration by inverse spectral and scattering methods

**37K40** Soliton theory, asymptotic behavior of solutions

**37K60** Lattice dynamics

**37J35** Completely integrable systems, etc.

**37K10** Completely integrable systems etc.

**37K30** Relations with algebraic structures

**81U40** Inverse scattering problems (quantum theory)

**81Q05** Closed and approximate solutions to quantum-mechanical equations

**58J50** Spectral problems; spectral geometry; scattering theory

**35Q51** Solitons

**35Q55** NLS-like (nonlinear Schroedinger) equations

**35Q58** Other completely integrable PDE