

Contents

	Page
Introduction	1
Notation	5
Chapter 1. Evolutionary equations. Results on existence	9
1.1 The (generalized) Korteweg–de Vries equation (KdVE)	10
1.2 The nonlinear Schrödinger equation (NLSE)	26
1.3 On the blowing up of solutions	36
1.4 Additional remarks.	37
Chapter 2. Stationary problems	39
2.1 Existence of solutions. An ODE approach	42
2.2 Existence of solutions. A variational method	49
2.3 The concentration-compactness method of P.L. Lions	56
2.4 On basis properties of systems of solutions	62
2.5 Additional remarks	76
Chapter 3. Stability of solutions	79
3.1 Stability of soliton-like solutions	80
3.2 Stability of kinks for the KdVE	90
3.3 Stability of solutions of the NLSE nonvanishing as $ x \rightarrow \infty$	94
3.4 Additional remarks	103
Chapter 4. Invariant measures	105
4.1 On Gaussian measures in Hilbert spaces	107
4.2 An invariant measure for the NLSE	118
4.3 An infinite series of invariant measures for the KdVE	124
4.4 Additional remarks	135
Bibliography	137
Index	147

Korteweg-de Vries and Nonlinear Schrödinger
Equations: Qualitative Theory

Zhidkov, P.E.

2001, X, 154 p., Softcover

ISBN: 978-3-540-41833-7