

1. Record Nr.	UNINA9910138870703321
Autore	Komech A. I
Titolo	Dispersion decay and scattering theory [[electronic resource] /] / Alexander Komech, Elena Kopylova
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, c2012
ISBN	1-282-16526-7 9786613808523 1-118-38288-9 1-118-38289-7 1-118-38286-2
Descrizione fisica	1 online resource (204 p.)
Altri autori (Persone)	KopylovaElena <1960->
Disciplina	530.12/4
Soggetti	Klein-Gordon equation Spectral theory (Mathematics) Scattering (Mathematics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Dispersion Decay and Scattering Theory; CONTENTS; List of Figures; Foreword; Preface; Acknowledgments; Introduction; 1 Basic Concepts and Formulas; 1 Distributions and Fourier transform; 2 Functional spaces; 2.1 Sobolev spaces; 2.2 Agmon-Sobolev weighted spaces; 2.3 Operator-valued functions; 3 Free propagator; 3.1 Fourier transform; 3.2 Gaussian integrals; 2 Nonstationary Schrodinger Equation; 4 Definition of solution; 5 Schrodinger operator; 5.1 A priori estimate; 5.2 Hermitian symmetry; 6 Dynamics for free Schrodinger equation; 7 Perturbed Schrodinger equation 7.1 Reduction to integral equation 7.2 Contraction mapping; 7.3 Unitarity and energy conservation; 8 Wave and scattering operators; 8.1 Moller wave operators: Cook method; 8.2 Scattering operator; 8.3 Intertwining identities; 3 Stationary Schrodinger Equation; 9 Free resolvent; 9.1 General properties; 9.2 Integral representation; 10 Perturbed resolvent; 10.1 Reduction to compact perturbation; 10.2 Fredholm Theorem; 10.3 Perturbation arguments; 10.4 Continuous spectrum; 10.5 Some improvements; 4 Spectral Theory; 11 Spectral

representation; 11.1 Inversion of Fourier-Laplace transform  
 11.2 Stationary Schrodinger equation  
 11.3 Spectral representation; 11.4  
 Commutation relation; 12 Analyticity of resolvent; 13 Gohberg-Bleher  
 theorem; 14 Meromorphic continuation of resolvent; 15 Absence of  
 positive eigenvalues; 15.1 Decay of eigenfunctions; 15.2 Carleman  
 estimates; 15.3 Proof of Kato Theorem; 5 High Energy Decay of  
 Resolvent; 16 High energy decay of free resolvent; 16.1 Resolvent  
 estimates; 16.2 Decay of free resolvent; 16.3 Decay of derivatives; 17  
 High energy decay of perturbed resolvent; 6 Limiting Absorption  
 Principle; 18 Free resolvent; 19 Perturbed resolvent  
 19.1 The case  $\lambda > 0$ ; 19.2 The case  $\lambda = 0$ ; 20 Decay of eigenfunctions;  
 20.1 Zero trace; 20.2 Division problem; 20.3 Negative eigenvalues;  
 20.4 Appendix A: Sobolev Trace Theorem; 20.5 Appendix B:  
 Sokhotsky-Plemelj formula; 7 Dispersion Decay; 21 Proof of dispersion  
 decay; 22 Low energy asymptotics; 8 Scattering Theory and Spectral  
 Resolution; 23 Scattering theory; 23.1 Asymptotic completeness; 23.2  
 Wave and scattering operators; 23.3 Intertwining and commutation  
 relations; 24 Spectral resolution; 24.1 Spectral resolution for the  
 Schrodinger operator; 24.2 Diagonalization of scattering operator  
 25 T-Operator and 5-Matrix  
 9 Scattering Cross Section; 26  
 Introduction; 27 Main results; 28 Limiting amplitude principle; 29  
 Spherical waves; 30 Plane wave limit; 31 Convergence of flux; 32 Long  
 range asymptotics; 33 Cross section; 10 Klein-Gordon Equation; 34  
 Introduction; 35 Free Klein-Gordon equation; 35.1 Dispersion decay;  
 35.2 Spectral properties; 36 Perturbed Klein-Gordon equation; 36.1  
 Spectral properties; 36.2 Dispersion decay; 37 Asymptotic  
 completeness; 11 Wave equation; 38 Introduction; 39 Free wave  
 equation; 39.1 Time decay; 39.2 Spectral properties; 40 Perturbed wave  
 equation  
 40.1 Spectral properties

## Sommario/riassunto

A simplified, yet rigorous treatment of scattering theory methods and  
 their applications. Dispersion Decay and Scattering Theory provides  
 thorough, easy-to-understand guidance on the application of  
 scattering theory methods to modern problems in mathematics,  
 quantum physics, and mathematical physics. Introducing spectral  
 methods with applications to dispersion time-decay and scattering  
 theory, this book presents, for the first time, the Agmon-Jensen-Kato  
 spectral theory for the Schrödinger equation, extending the theory to  
 the Klein-Gordon equation. The dispersion decay p