

1. Record Nr.	UNINA9910461949903321
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Titolo	Green's function estimates for lattice Schrodinger operators and applications // J. Bourgain
Pubbl/distr/stampa	Princeton, New Jersey : , : Princeton University Press, , 2005 ©2005
ISBN	1-4008-3714-6 0-691-12098-6
Descrizione fisica	1 online resource (184 p.)
Collana	Annals of Mathematics Studies ; ; Number 158
Disciplina	515.3/9
Soggetti	Schrodinger operator Green's functions Hamiltonian systems Evolution equations Electronic books.
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 at the end of each chapters.
Nota di contenuto	Front matter -- Contents -- Acknowledgment -- Chapter 1. Introduction -- Chapter 2. Transfer Matrix and Lyapounov Exponent -- Chapter 3. Herman's Subharmonicity Method -- Chapter 4. Estimates on Subharmonic Functions -- Chapter 5. LDT for Shift Model -- Chapter 6. Avalanche Principle in $SL_2(\mathbb{R})$ -- Chapter 7. Consequences for Lyapounov Exponent, IDS, and Green's Function -- Chapter 8. Refinements -- Chapter 9. Some Facts about Semialgebraic Sets -- Chapter 10. Localization -- Chapter 11. Generalization to Certain Long-Range Models -- Chapter 12. Lyapounov Exponent and Spectrum -- Chapter 13. Point Spectrum in Multifrequency Models at Small Disorder -- Chapter 14. A Matrix-Valued Cartan-Type Theorem -- Chapter 15. Application to Jacobi Matrices Associated with Skew Shifts -- Chapter 16. Application to the Kicked Rotor Problem -- Chapter 17. Quasi-Periodic Localization on the $\mathbb{Z}^d$ -lattice ($d > 1$) -- Chapter 18. An Approach to Melnikov's Theorem on Persistency of Nonresonant Lower Dimension Tori -- Chapter 19. Application to the Construction of Quasi-Periodic Solutions of Nonlinear Schrödinger Equations --

Sommario/riassunto

This book presents an overview of recent developments in the area of localization for quasi-periodic lattice Schrödinger operators and the theory of quasi-periodicity in Hamiltonian evolution equations. The physical motivation of these models extends back to the works of Rudolph Peierls and Douglas R. Hofstadter, and the models themselves have been a focus of mathematical research for two decades. Jean Bourgain here sets forth the results and techniques that have been discovered in the last few years. He puts special emphasis on so-called "non-perturbative" methods and the important role of subharmonic function theory and semi-algebraic set methods. He describes various applications to the theory of differential equations and dynamical systems, in particular to the quantum kicked rotor and KAM theory for nonlinear Hamiltonian evolution equations. Intended primarily for graduate students and researchers in the general area of dynamical systems and mathematical physics, the book provides a coherent account of a large body of work that is presently scattered in the literature. It does so in a refreshingly contained manner that seeks to convey the present technological "state of the art."
