## Contents

Acknowledgment vii  
Chapter 1. Introduction 1  
Chapter 2. Transfer Matrix and Lyapounov Exponent 11  
Chapter 3. Herman's Subharmonicity Method 15  
Chapter 4. Estimates on Subharmonic Functions 19  
Chapter 5. LDT for Shift Model 25  
Chapter 6. Avalanche Principle in $SL_2(\mathbb{R})$ 29  
Chapter 7. Consequences for Lyapounov Exponent, IDS, and Green's Function 31  
Chapter 8. Refinements 39  
Chapter 9. Some Facts about Semialgebraic Sets 49  
Chapter 10. Localization 55  
Chapter 11. Generalization to Certain Long-Range Models 65  
Chapter 12. Lyapounov Exponent and Spectrum 75  
Chapter 13. Point Spectrum in Multifrequency Models at Small Disorder 87  
Chapter 14. A Matrix-Valued Cartan-Type Theorem 97  
Chapter 15. Application to Jacobi Matrices Associated with Skew Shifts 105  
Chapter 16. Application to the Kicked Rotor Problem 117  
Chapter 17. Quasi-Periodic Localization on the $\mathbb{Z}^d$-lattice ($d > 1$) 123  
Chapter 18. An Approach to Melnikov's Theorem on Persistency of Non-resonant Lower Dimension Tori 133
Chapter 19. Application to the Construction of Quasi-Periodic Solutions of Nonlinear Schrödinger Equations 143

Chapter 20. Construction of Quasi-Periodic Solutions of Nonlinear Wave Equations 159

Appendix 169