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Equations -- Appendix

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."