

1. Record Nr.	UNINA9910739429003321
Autore	Yu Sunkyu
Titolo	Top-Down Design of Disordered Photonic Structures : Multidisciplinary Approaches Inspired by Quantum and Network Concepts // by Sunkyu Yu, Xianji Piao, Namkyoo Park
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2019
ISBN	981-13-7527-5
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (VII, 88 p. 49 illus., 48 illus. in color.)
Collana	SpringerBriefs in Physics, , 2191-5423
Disciplina	621.36
Soggetti	Lasers Photonics Microwaves Optical engineering Quantum optics Solid state physics Optics, Lasers, Photonics, Optical Devices Microwaves, RF and Optical Engineering Quantum Optics Solid State Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1 Introduction -- Chapter 2 Designing Spectra in Disordered Photonic Structures -- Chapter 3 Designing Modes in Disordered Photonic Structures -- Chapter 4 Conclusion and Outlook.
Sommario/riassunto	This book introduces recent advances in the deterministic design of photonic structures, which overcome the current limitation in conventional disordered materials. It develops new concepts for disordered photonics inspired by notions in quantum mechanics, solid-state physics, mathematics and network theory, such as isospectrality, supersymmetry, graph network, small-world, de Broglie-Bohm theory, and parity-time symmetry. The multidisciplinary approach based on the core concepts of isospectrality (Chapter 2) and metadisorder (Chapter 3) offers a new perspective on the design methodology in photonics

and in general disordered structures toward top-down designs of future photonic applications: perfect bandgap with strong modal localization, switching of random waves for binary and fuzzy logics, photonic analogy of graph networks, interdimensional signal transport, robust wave functions in disordered structures, and a novel method of energy storage and phase trapping based on Bohmian photonics. This book will provide new design criteria for physicists and engineers in photonics, and inspirations for researchers in other fields.

---