

Quantum Science and Technology

Dimitris G. Angelakis *Editor*

Quantum Simulations with Photons and Polaritons

Merging Quantum Optics with
Condensed Matter Physics

 Springer

pb
b7 450

ด 16982/12
ด 125/5086
ด 1454934

Dimitris G. Angelakis
Editor

Quantum Simulations with Photons and Polaritons

Merging Quantum Optics with Condensed Matter Physics



Contents

1 Strongly Correlated Polaritons in Nonlinear Cavity Arrays	1
Andrea Tomadin, Davide Rossini and Rosario Fazio	
2 Phase Diagram and Excitations of the Jaynes-Cummings-Hubbard Model	23
Sebastian Schmidt and Gianni Blatter	
3 Out-of-Equilibrium Physics in Driven Dissipative Photonic Resonator Arrays	43
Changsuk Noh, Stephen R. Clark, Dieter Jaksch and Dimitris G. Angelakis	
4 Topological Physics with Photons	71
Mohammad Hafezi and Jacob Taylor	
5 Exciton-Polariton Quantum Simulators	91
Na Young Kim and Yoshihisa Yamamoto	
6 Strongly Correlated Photons in Nonlinear Nanophotonic Platforms	123
D. Gerace, C. Ciuti and I. Carusotto	
7 Quantum Simulations with Circuit Quantum Electrodynamics	153
Guillermo Romero, Enrique Solano and Lucas Lamata	
8 Dirac Dynamics in Waveguide Arrays: From <i>Zitterbewegung</i> to Photonic Topological Insulators	181
F. Dreisow, M.C. Rechtsman, J.M. Zeuner, Y. Plotnik, R. Keil, S. Nolte, M. Segev and A. Szameit	