1. Record Nr. UNINA9910991176903321

Autore	Ohtsu Motoichi
Titolo	Dressed Photons to Revolutionize Modern Physics : Exploring Longitudinal Electromagnetic Waves and Off-Shell Quantum Fields / / by Motoichi Ohtsu, Hirofumi Sakuma
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	3-031-77944-4
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (XI, 118 p. 48 illus., 31 illus. in color.)
Collana	Nano-Optics and Nanophotonics, , 2192-1989
Disciplina	530.12
Soggetti	Quantum theory Nanophotonics Plasmonics Nanotechnology General relativity (Physics) Particles (Nuclear physics) Quantum field theory Optoelectronic devices Quantum Physics Nanophotonics and Plasmonics General Relativity Elementary Particles, Quantum Field Theory Optoelectronic Devices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Historical Review of Dressed Photon -- Progresses in Experimental Studies on Dressed Photon -- Preliminary Theoretical Studies and Numerical Simulations -- A Quantum Walk Model for the Dressed Photon Energy Transfer -- Introductory Remarks on Theoretical Chapters -- Brief Review on Generalized Hamiltonian Structure -- O-shell Electromagnetic Field -- Novel Aspect of Conformal Gravity -- Novel Cosmology to be Opened up by O-shell Science -- Implications of the Novel Cosmology.
Sommario/riassunto	This book presents an in-depth review of the recent interdisciplinary

studies that have shed light on the mechanisms of the creation, energy transfer, and measurement of the dressed photon. A dressed photon is a type of photon that results from the interaction between light and matter in a confined space, typically on the scale of nanometers. It has been applied to nano-fabrication technologies, energy conversion technologies, and silicon light-emitting devices. Despite its extensive applications in various fields, the dressed photon's off-shell nature has posed challenges in describing it through conventional optical scientific theories. The book explains how, through a mathematical viewpoint, the underlying spatiotemporal vortex dynamics connect the dressed photon, the dark energy field, and the structure of the universe. The canonical equations of motion, which describe the time evolution of dynamical systems with Hamiltonian structure, play a key role in understanding these physical phenomena. In particular, the covariant form of equations of motion, where vortex tensors explicitly appear, corresponds to the transformed canonical equations of motion in the Eulerian representation. This newly augmented view of the equations of motion presents a deeper understanding of the interconnectedness of different physical phenomena, which can enlighten graduate students, junior scientists, and industry engineers engaged or interested in this field.