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	Titolo	Unifying Classical and Quantum Physics : How classical and quantum physics can pass smoothly back and forth / / by Riccardo Fantoni
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	Edizione	[1st ed. 2025.]
	Descrizione fisica	1 online resource (219 pages)
	Collana	Physics and Astronomy Series
	Disciplina	530.15
	Soggetti	Mathematical physics Particles (Nuclear physics) Quantum field theory Mechanics Quantum theory Physics Astronomy Mathematical Methods in Physics Elementary Particles, Quantum Field Theory Classical Mechanics Fundamental concepts and interpretations of QM Quantum Physics Physics and Astronomy
	Lingua di pubblicazione	Inglese
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	Livello bibliografico	Monografia
	Nota di contenuto	Introduction -- Triviality of four dimensional 4 theory on the lattice -- The Higgs boson -- Initial singularity problem -- Quantization procedures -- Real scalar field theory -- Path integral Monte Carlo -- Complex scalar field theory -- Conclusions.
	Sommario/riassunto	This book presents a comprehensive exploration of affine quantization and its implications for quantum mechanics, quantum field theory, and even quantum gravity. Canonical quantization has been a cornerstone of quantum mechanics, but it struggles with certain fundamental problems, such as the quantization of a particle in a box. A new approach, affine quantization, offers a more robust framework,

addressing challenges that canonical methods cannot resolve. Drawing on the results of our collaboration, we develop a self-contained and rigorous exposition, complete with detailed proofs. Our goal is to provide a valuable reference for graduate students, mathematicians, and physicists seeking deeper insights into unresolved issues of the Standard Model—particularly the Higgs sector—and quantum gravity. From the triviality problem in scalar field theories to the role of quantization in addressing singularities, this book connects fundamental mathematical concepts with pressing questions in modern physics. By presenting both theoretical developments and numerical results, we offer readers a structured approach to exploring novel quantization methods and their impact on contemporary physics.