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Titolo	The Emerging Quantum : The Physics Behind Quantum Mechanics / / by Luis de la Peña, Ana María Cetto, Andrea Valdés Hernández
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Descrizione fisica	1 online resource (371 p.)
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Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- Quantum Mechanics: questions -- The phenomenological stochastic approach: a short route to quantum mechanics -- The Planck distribution, a necessary consequence of the fluctuating zero-point field -- The long journey to the Schrödinger equation -- The road to Heisenberg quantum mechanics -- Beyond the Schrödinger equation -- Disentangling quantum entanglement -- Causality, locality and entanglement in quantum mechanics -- The zero-point field waves (and) matter -- Quantum mechanics: some answers -- References -- Suggested literature -- Index.
Sommario/riassunto	This monograph presents the latest findings from a long-term research project intended to identify the physics behind Quantum Mechanics. A fundamental theory for quantum mechanics is constructed from first physical principles, revealing quantization as an emergent phenomenon arising from a deeper stochastic process. As such, it offers the vibrant

community working on the foundations of quantum mechanics an alternative contribution open to discussion. The book starts with a critical summary of the main conceptual problems that still beset quantum mechanics. The basic consideration is then introduced that any material system is an open system in permanent contact with the random zero-point radiation field, with which it may reach a state of equilibrium. Working from this basis, a comprehensive and self-consistent theoretical framework is then developed. The pillars of the quantum-mechanical formalism are derived, as well as the radiative corrections of nonrelativistic QED, while revealing the underlying physical mechanisms. The genesis of some of the central features of quantum theory is elucidated, such as atomic stability, the spin of the electron, quantum fluctuations, quantum nonlocality, and entanglement. The theory developed here reaffirms fundamental scientific principles such as realism, causality, locality and objectivity.