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Nota di contenuto	An Introduction to Quantum Probability -- Covariant Mappings for the Description of Measurement, Dissipation and Decoherence in Quantum Mechanics -- Quantum Open Systems with Time-Dependent Control -- Five Lectures on Quantum Information Applications of Complex Many-Body Systems -- Non-Markovian Quantum Dynamics and the Method

	of Correlated Projection Super-Operators -- Testing Quantum Mechanics in High-Energy Physics -- Five Lectures on Optical Quantum Computing -- Quantum Information and Relativity: An Introduction.
Sommario/riassunto	Based on eight extensive lectures selected from those given at the renowned Chris Engelbrecht Summer School in Theoretical Physics in South Africa, this text on the theoretical foundations of quantum information processing and communication covers an array of topics, including quantum probabilities, open systems, and non-Markovian dynamics and decoherence. It also addresses quantum information and relativity as well as testing quantum mechanics in high energy physics. Because these self-contained lectures discuss topics not typically covered in advanced undergraduate courses, they are ideal for post-graduate students entering this field of research. Some of the lectures are written at a more introductory level while others are presented as tutorials that survey recent developments and results in various subfields.