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Autore	Paugam Frédéric
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Nota di contenuto	Introduction -- Mathematical Preliminaries -- Classical Trajectories and Fields -- Quantum Trajectories and Fields -- Appendices.
Sommario/riassunto	The aim of this book is to introduce mathematicians (and, in particular, graduate students) to the mathematical methods of theoretical and experimental quantum field theory, with an emphasis on coordinate-free presentations of the mathematical objects in play. This should in turn promote interaction between mathematicians and physicists by supplying a common and flexible language for the good of both communities, even if the mathematical one is the primary target. This reference work provides a coherent and complete mathematical toolbox for classical and quantum field theory, based on categorical and homotopical methods, representing an original contribution to the literature. The first part of the book introduces the mathematical methods needed to work with the physicists' spaces of fields, including

parameterized and functional differential geometry, functorial analysis, and the homotopical geometric theory of non-linear partial differential equations, with applications to general gauge theories. The second part presents a large family of examples of classical field theories, both from experimental and theoretical physics, while the third part provides an introduction to quantum field theory, presents various renormalization methods, and discusses the quantization of factorization algebras. The book is primarily intended for pure mathematicians (and in particular graduate students) who would like to learn about the mathematics of quantum field theory.