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Sommario/riassunto

Based on lectures given at the renowned Villa de Leyva summer school, this book provides a unique presentation of modern geometric methods in quantum field theory. Written by experts, it enables readers to enter some of the most fascinating research topics in this subject. Covering a series of topics on geometry, topology, algebra, number theory methods and their applications to quantum field theory, the book covers topics such as Dirac structures, holomorphic bundles and stability, Feynman integrals, geometric aspects of quantum field theory and the standard model, spectral and Riemannian geometry and index theory. This is a valuable guide for graduate students and researchers in physics and mathematics wanting to enter this interesting research field at the borderline between mathematics and physics.