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Nota di contenuto	A derived and homotopical view on field theories, Damien Calaque -- Part I Locality in Perturbative QFTs -- 2 Perturbative algebraic quantum field theory, Klaus Fredenhagen and Katarzyna Rejzner -- Lectures on mathematical aspects of (twisted) supersymmetric gauge theories, Kevin Costello and Claudia Scheimbauer -- 4 Snapshots of Conformal Field Theory, Katrin Wendland -- Part II Chern-Simons Theory -- Faddeev's quantum dilogarithm and state-integrals on shaped triangulations, Jørgen Ellegaard Andersen and Rinat Kashaev -- 6 A higher stacky perspective on Chern-Simons theory, Domenico Fiorenza, Hisham Sati and Urs Schreiber -- Factorization homology in 3-dimensional topology, Nikita Markarian & Hiro Lee Tanaka -- Manifoldic homology and Chern-Simons formalism (by Nikita

Markarian) -- Factorization Homology and Link Invariants (by Hiro Lee Tanaka) -- Deligne-Beilinson cohomology in U(1) Chern-Simons theories, Frank Thuillier -- Part III (Semi-)Classical Field Theories -- Semiclassical quantization of classical field theories, Alberto S. Cattaneo, Pavel Mnev and Nicolai Reshetikhin -- Local BRST cohomology for AKSZ field theories: a global approach, Giuseppe Bonavolontà and Alexei Kotov -- Symplectic and Poisson geometry of the moduli spaces of at connections over quilted surfaces, David Li-Bland and Pavol Ševera -- Groupoids, Frobenius algebras and Poisson sigma models, Ivan Contreras -- Part IV Algebraic Aspects of Locality -- Notes on factorization algebras, factorization homology and applications, Grégory Ginot -- Index.

Sommario/riassunto

Despite its long history and stunning experimental successes, the mathematical foundation of perturbative quantum field theory is still a subject of ongoing research. This book aims at presenting some of the most recent advances in the field, and at reflecting the diversity of approaches and tools invented and currently employed. Both leading experts and comparative newcomers to the field present their latest findings, helping readers to gain a better understanding of not only quantum but also classical field theories. Though the book offers a valuable resource for mathematicians and physicists alike, the focus is more on mathematical developments. This volume consists of four parts: The first Part covers local aspects of perturbative quantum field theory, with an emphasis on the axiomatization of the algebra behind the operator product expansion. The second Part highlights Chern-Simons gauge theories, while the third examines (semi-)classical field theories. In closing, Part 4 addresses factorization homology and factorization algebras.