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Record Nr. UNINA9911022178103321 Autore Igbal Nabil Titolo Lectures on Generalized Global Symmetries: Principles and Applications / / by Nabil Iqbal Cham:,: Springer Nature Switzerland:,: Imprint: Springer,, 2025 Pubbl/distr/stampa **ISBN** 9783032000224 Edizione [1st ed. 2025.] Descrizione fisica 1 online resource (X, 76 p. 14 illus., 8 illus. in color.) Collana SpringerBriefs in Physics, , 2191-5431 Disciplina 530.14 Soggetti Particles (Nuclear physics) Quantum field theory Condensed matter Statistical mechanics Elementary Particles, Quantum Field Theory Particle Physics Condensed Matter Physics Statistical Mechanics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Nota di contenuto Introduction motivation and high level explanation of how gauge theories necessitate the understanding of new symmetry principles --Ordinary global symmetries phases of matter and the landau paradigm explanation of the landau paradigm of the phases of matter and the reformulation of conventional global symmetries in the language of topological operators -- Higher form symmetries explanation of higher form symmetries in the language of topological operators --Applications examples including electrodynamics non abelian gauge theory in the continuum and the lattice and goldstones theorem -- Non invertible symmetries the axial anomaly explanation of anomalies discussion of axial anomaly in terms of non-invertible symmetry --More applied applications applications of higher form symmetries to problems in hydrodynamics.

This open access book provides an introductory set of lectures on

generalized global symmetries, originally delivered at the Jena TPI School on Quantum Field Theory and Holography. It is designed to be

Sommario/riassunto

accessible to readers with a basic understanding of quantum field theory. The topics include an introduction to higher-form symmetries and their applications in various contexts: Abelian and non-Abelian gauge theories (in both continuum and lattice formulations), statistical mechanics, the Adler-Bell-Jackiw anomaly viewed through the lens of non-invertible symmetries, and magnetohydrodynamics. The book minimizes mathematical formalism and focuses on the global symmetry structures present in well-known physical models.