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	Nota di contenuto	-- 1 Introduction. -- 2 Thermalization in isolated quantum systems. -- 3 Violation of the ETH in QFTs with higher-form symmetry. -- 4 Effects of projective phase on the ETH. -- 5 Conclusion and discussion. -- 6 Appendices.
	Sommario/riassunto	The eigenstate thermalization hypothesis (ETH) provides a successful framework for understanding thermalization in isolated quantum systems. While extensive numerical and theoretical studies support ETH as a key mechanism for thermalization, determining whether specific systems satisfy ETH analytically remains a challenge. In quantum many-body systems and quantum field theories, ETH violations signal nontrivial thermalization processes and are gaining attention. This book explores how higher-form symmetries affect thermalization dynamics in isolated quantum systems. It analytically shows that a p-form symmetry in a $(d+1)$-dimensional quantum field theory can cause ETH breakdown for certain nontrivial $(d-p)$-dimensional

observables. For discrete higher-form symmetries (i.e., $p\geq 1$), thermalization fails for observables that are non-local yet much smaller than the system size, despite the absence of local conserved quantities. Numerical evidence is provided for the $(2+1)$-dimensional $\mathbb{Z}_2$ lattice gauge theory, where local observables thermalize, but non-local ones, such as those exciting a magnetic dipole, relax to a generalized Gibbs ensemble incorporating the $\mathbb{Z}_2$ 1-form symmetry. The ETH violation mechanism here involves the mixing of symmetry sectors within an energy shell—a rather difficult condition to verify. To address this, the book introduces a projective phase framework for $\mathbb{Z}_N$-symmetric theories, supported by numerical analyses of spin chains and lattice gauge theories.