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Nota di contenuto	Motivations and Scope of the Present Work -- Two Paths to Group Field Theories -- Colors and Tensor Invariance -- Large N Expansion in Topological Group Field Theories -- Renormalization of Tensorial Group Field Theories: Generalities -- Super-Renormalizable U(1) Models in Four Dimensions -- Just-Renormalizable SU(2) Model in Three Dimensions.
Sommario/riassunto	The main focus of this thesis is the mathematical structure of Group Field Theories (GFTs) from the point of view of renormalization theory. Such quantum field theories are found in approaches to quantum gravity related, on the one hand, to Loop Quantum Gravity (LQG) and, on the other, to matrix- and tensor models. Background material on these topics, including conceptual and technical aspects, are

introduced in the first chapters. The work then goes on to explain how the standard tools of Quantum Field Theory can be generalized to GFTs, and exploited to study the large cut-off behaviour and renormalization group transformations of the latter. Among the new results derived in this context are a proof of renormalizability of a three-dimensional GFT with gauge group SU(2), which opens the way to applications of the formalism to quantum gravity.