1.	Record Nr.	UNINA9910915792003321
	Autore	Candela Pablo
	Titolo	Nilspace Factors for General Uniformity Seminorms, Cubic Exchangeability and Limits
	Pubbl/distr/stampa	Providence : , : American Mathematical Society, , 2023 ©2023
	ISBN	1-4704-7541-3
	Edizione	[1st ed.]
	Descrizione fisica	1 online resource (114 pages)
	Collana	Memoirs of the American Mathematical Society Series ; ; v.287
	Classificazione	37Axx37A1560-XX60Bxx11B30
	Altri autori (Persone)	SzegedyBalázs
	Disciplina	512/.2505 512.2505
	Soggetti	Nilpotent groups Curves, Cubic Ergodic theory Measure-preserving transformations Dynamical systems and ergodic theory -- Ergodic theory Dynamical systems and ergodic theory -- Ergodic theory -- General groups of measure-preserving transformations Probability theory and stochastic processes Probability theory and stochastic processes -- Probability theory on algebraic and topological structures Number theory -- Sequences and sets -- Arithmetic combinatorics; higher degree uniformity
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Cover -- Title page -- Chapter 1. Introduction -- Acknowledgments -- Chapter 2. Measure-theoretic preliminaries -- 2.1. Some basic notions -- 2.2. Couplings -- 2.3. Closed properties in a coupling space -- 2.4. Localization -- 2.5. Conditional independence in set lattices -- 2.6. Idempotent couplings -- Chapter 3. Cubic couplings -- 3.1. Conditional independence of simplicial sets -- 3.2. Tricubes -- 3.3. $\wedge\{$ $\}$-convolutions and $\wedge\{$ $\}$-seminorms associated with a cubic coupling -- 3.4. Fourier -algebras -- 3.5. Properties of $\wedge\{$ $\}$-convolutions -- 3.6. Topologization of cubic couplings -- 3.7. Continuous -convolutions -- 3.8. Topological nilspace factors of \ns -- Chapter 4. The structure

Sommario/riassunto	"We study a class of measure-theoretic objects that we call cubic couplings, on which there is a common generalization of the Gowers norms and the Host- Kra seminorms. Our main result yields a complete structural description of cubic couplings, using nilspaces. We give three applications. Firstly, we describe the characteristic factors of Host-Kra type seminorms for measure-preserving actions of countable nilpotent groups. This yields an extension of the structure theorem of Host and Kra. Secondly, we characterize sequences of random variables with a property that we call cubic exchangeability. These are sequences indexed by the infinite discrete cube, such that for every integer $k \geq 0$ the joint distribution's marginals on affine subcubes of dimension k are all equal. In particular, our result gives a description, in terms of compact nilspaces, of a related exchangeability property considered by Austin, inspired by a problem of Aldous. Finally, using nilspaces we obtain limit objects for sequences of functions on compact abelian groups (more generally on compact nilspaces) such that the densities of certain patterns in these functions converge. The paper thus proposes a measure-theoretic framework on which the area of higher-order Fourier analysis can be based, and which yields new applications of this area in a unified way in ergodic theory and arithmetic combinatorics"--