Record Nr. UNINA9910495154403321 Positivity and its applications: Positivity X, 8-12 July 2019, Pretoria, **Titolo** South Africa / / editors, Eder Kikianty [et al.] Pubbl/distr/stampa Cham:,: Springer International Publishing AG,, 2021 ©2021 **ISBN** 3-030-70974-4 Descrizione fisica 1 online resource (321 pages) Collana Trends in mathematics Altri autori (Persone) KikiantyEder MabulaMokhwetha MesserschmidtMiek van der WaltJan Harm WortelMarten Soggetti Operator theory Ordered topological spaces Positive operators Teoria d'operadors Espais topològics ordenats Congressos Llibres electrònics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Intro -- Preface -- Contents -- Coenraad Christoffel Andries Nota di contenuto Labuschagne -- Inverse Monotonicity of Elliptic Operators in Variational Form -- 1 Introduction -- 2 Operators Associated with Elliptic PDEs: The Classical Case -- 3 Operators Associated with Elliptic PDEs in Variational Formulation -- 4 Operators Associated with Weakly Coupled System of PDEs in Variational Form -- 5 Conclusion -- References --On Compact Operators Between Lattice Normed Spaces -- 1 Introduction -- 2 Preliminaries -- 3 p-Compact Operators Are p-Bounded -- 4 Semicompact Operators -- 5 rp-Compact Operators --References -- How to Be Positive in Natural Sciences? -- 1 Introduction

-- 2 Population Balance Equations -- 3 Finite-Dimensional Population

Equation -- 4 Making a Step to Infinity -- 4.1 A Death Equation: Multiple Solutions -- 4.2 A Birth Process: Breach of the Conservation Law -- 5 Between Model and Its Analysis -- 6 Substochastic Semigroup Theory -- 6.1 Generation Theorems -- 6.2 How Do Multiple Solutions Fit into the Theory of Semigroups? -- 6.3 Perturbation Theory for Positive Semigroups -- 7 Honesty of the Semigroup and Characterization of Its Generator -- 7.1 The Three Functionals -- 7.2 Structure of Honesty -- 7.3 A Hunt for Honest Semigroups -- 8 Conclusion -- References -- Real Positive Maps and Conditional Expectations on OperatorAlgebras -- 1 Introduction: Real Positivity --2 Some General Results on Real Positivity -- 3 Real Positive Maps -- 4 Quasimultipliers and a Banach-Stone Theorem -- 5 Contractive Projections on Operator Algebras -- 6 What Are Conditional Expectations? -- 7 Noncommutative Characters on Noncommutative Function Algebras (Operator Algebras) -- References -- Free Vector Lattices and Free Vector Lattice Algebras -- 1 Introduction and Overview -- 2 Free Objects -- 3 Universal Algebra: Part I. 4 Various Lattices as Abstract Algebras Satisfying Identities -- 5 Universal Algebra: Part II -- 6 Free Vector Lattices and Free Objects of Categories of Vector Lattice Algebras -- 7 Free Objects Over Lattices --8 Free f-algebras -- References -- On Disjointness, Bands and Projections in Partially Ordered Vector Spaces -- 1 Introduction -- 1.1 Disjointness -- 1.2 Disjoint Complements and pre-Riesz Spaces -- 1.3 Organisation of the Paper -- 1.4 Setting the Stage -- 2 Bands -- 2.1 Basics -- 2.2 The Lattice of All Bands -- 2.3 The Sum of Two Bands --3 Band Projections -- 3.1 Basics -- 3.2 The Boolean Algebra of Band Projections -- 3.3 The Intersection of Arbitrarily Many Projection Bands -- 3.4 Another Characterisation of Band Projections -- 4 Characterisations of Vector Lattices -- 4.1 Criteria in Terms of One-Dimensional Projection Bands -- 4.2 Criteria in Terms of the Number of Projection Bands -- 4.3 Criteria in the Class of Weakly Pervasive Spaces -- 4.4 Criteria in Terms of Other Concepts of Disjointness --References -- 101 Years of Vector Lattice Theory: A Vector Lattice-Valued Daniell Integral -- 1 Introduction -- 2 Riesz Spaces or Daniell Spaces? -- 3 Daniell's Paper -- 4 The Vector-Valued I-Integral -- 5 Semi-Integrals -- 6 Summability -- 7 S-Integrals -- 8 Conclusion --References -- Ergodicity in Riesz Spaces -- 1 Introduction -- 2 Preliminaries -- 3 Ergodicity on Riesz Spaces -- 4 Application to Conditional Weak Mixing -- 5 Application to Processes with Conditionally Independent Shifts -- References -- Multiplicative Representation of Real-Valued bi-Riesz Homomorphisms on Partially Ordered Vector Spaces -- 1 Introduction -- 2 Preliminaries -- 3 Representation of bi-Riesz Homomorphisms -- 4 Kernels of Differences of Riesz Homomorphisms -- References -- Orthogonality: An Antidote to Kadison's Anti-Lattice Theorem -- 1 Introduction. 2 Substitutes for Infimum and Supremum -- 3 Orthogonality and Norm -- References -- Binary Relations in Mathematical Economics: On Continuity, Additivity and Monotonicity Postulates in Eilenberg, Villegas and DeGroot -- 1 Introduction -- 2 Mathematical and Conceptual Preliminaries -- 3 On the Existence of a Continuous Binary Relation --3.1 On Ordered Topological Spaces -- 3.2 On Weakly Ordered Topological Spaces -- 3.3 Discussion of the Results -- 4 On the Additivity Postulate -- 4.1 Additivity and Transitivity: A Two-Way Relationship -- 4.2 Implications of Additivity for Monotone Continuity -- 4.3 Discussion of the Results -- 5 Order and Positivity in Mathematical Economics -- References -- On Fixed Point Theory in Partially Ordered (Quasi-)metric Spaces and an Application to Complexity Analysis of Algorithms -- 1 Introduction and Preliminaries

-- 2 The Existence of Fixed Point -- 3 The Relationship with Kleene Fixed Point Theorem -- 4 An Application to Complexity Analysis of Algorithms -- 4.1 The Fixed Point Method -- References -- Inheritance Properties of Positive Cones Induced by Subalgebras and Quotients of Ordered Banach Algebras -- 1 Introduction -- 2 Monotonicity of the Spectral Radius -- 3 Normal Algebra Cones -- References --Universally Complete Spaces of Continuous Functions -- 1 Introduction -- 2 Preliminaries -- 3 Universally Complete C (X) -- References --Applications of Generalized B\*-Algebras to Quantum Mechanics -- 1 Introduction -- 2 Preliminaries -- 3 The Joint System of Quantum Systems -- 4 Quantum Entanglement -- 5 Integral Representations of Positive Linear Functionals of GB\*-Algebras and an Alternative Definition of Quantum Entanglement -- 6 Pure States of GB\*-Algebras -- 7 Extremal Decomposition of States of Linearly Nuclear \*-Algebras -- 8 An Extremal Decomposition Theorem for Locally Convex Quasi \*-Algebras.

9 An Example -- References -- List of Participants.

## Sommario/riassunto

This proceedings volume features selected contributions from the conference Positivity X. The field of positivity deals with ordered mathematical structures and their applications. At the biannual series of Positivity conferences, the latest developments in this diverse field are presented. The 2019 edition was no different, with lectures covering a broad spectrum of topics, including vector and Banach lattices and operators on such spaces, abstract stochastic processes in an ordered setting, the theory and applications of positive semi-groups to partial differential equations, Hilbert geometries, positivity in Banach algebras and, in particular, operator algebras, as well as applications to mathematical economics and financial mathematics. The contributions in this book reflect the variety of topics discussed at the conference. They will be of interest to researchers in functional analysis, operator theory, measure and integration theory, operator algebras, and economics. Positivity X was dedicated to the memory of our late colleague and friend, Coenraad Labuschagne. His untimely death in 2018 came as an enormous shock to the Positivity community. He was a prominent figure in the Positivity community and was at the forefront of the recent development of abstract stochastic processes in a vector lattice context.