1. Record Nr. UNISA996466600003316

Autore	Meyer Paul Andre
Titolo	Quantum probability for probabilists / / Paul-Andre Meyer
Pubbl/distr/stampa	Berlin, Germany ; ; New York, New York : , : Springer-Verlag, , [1993] ©1993
ISBN	3-662-21558-6
Edizione	[1st ed. 1993.]
Descrizione fisica	1 online resource (X, 293 p.)
Collana	Lecture Notes in Mathematics, , 0075-8434 ; ; 1538
Classificazione	81S25
Disciplina	519.2
Soggetti	Distribution (Probability theory) Quantum theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	I: Non Commutative Probability -- II: Spin -- III: The Harmonic Oscillator -- IV: Fock Space (1) -- V. Multiple Fock Spaces -- VI. Stochastic Calculus on Fock Space -- VII. Independence -- Appendix 1: Functional Analysis -- Hilbert-Schmidt operators (1) -- Trace class operators (2) -- Duality properties (3) Weak convergence properties (4) -- Weak topologies for operators (5) -- Tensor products of Hilbert spaces (6–7) -- Appendix 2: Conditioning and Kernels -- Conditioning: discrete case (1) -- Conditioning: continuous case (2) -- Example of the canonical pair (3) -- Multiplicity theory (4) -- Classical kernels (5) -- Non commutative kernels, first form (6) -- second form (7) -- Completely positive maps (8) -- Some difficulties (9) -- Appendix 3: Two Events -- 1. Elementary theory -- Application of spectral theory (2) -- Some elementary properties (3) -- Positive elements (4) -- Symbolic calculus for s.a. elements (5) -- Applications (6) -- Characterization of positive elements (7) -- A few inequalities (8) -- Existence of many states (1) -- Representations and the GNS theorem (2–3) -- Examples from toy Fock space theory (4) -- Quotient algebras and approximate units (5) -- 3. Von Neumann algebras -- Weak topologies and normal states (1) -- Von Neumann’s bicommutant theorem (2–3) -- Kaplanski’s density theorem (4) -- The predual (5) -- Normality and order continuity (6) -- About integration theory (7) -- Measures with bounded density (8) -- The linear Radon-Nikodym

theorem (9) -- The KMS condition (10) -- Entire vectors (11) -- 4. The Tomita-Takesaki theory -- Elementary geometric properties (1) -- The main operators (2–3) -- Interpretation of the adjoint (4) -- The modular property (5) -- Using the linear RN theorem (6) -- The main computation (7) -- The three main theorems (8) -- Additional results (9) -- Examples (10) -- Appendix 5: Local Times and Fock Space -- 1. Dynkin’s formula -- Symmetric Markov semigroups and processes (1) -- Dynkin’s formula (2) -- Sketch of the Marcus-Rosen approach to the continuity of local times (3) -- 2. Le Jan’s “supersymmetric” approach -- Notations of complex Brownian motion (1) -- Computing the Wiener product (2) -- Stratonovich integral and trace (4) -- Expectation of the exponential of an element of the second chaos (5) -- Exponential formula in the antisymmetric case (7) -- Supersymmetric Fock space: the Wick and Wiener products (8) -- Properties of the Wiener product (9) -- Applications to local times (sketch) (10) -- References -- Index of Notation.

Sommario/riassunto

These notes contain all the material accumulated over six years in Strasbourg to teach "Quantum Probability" to myself and to an audience of commutative probabilists. The text, a first version of which appeared in successive volumes of the Seminaire de Probabilite8, has been augmented and carefully rewritten, and translated into international English. Still, it remains true "Lecture Notes" material, and I have resisted suggestions to publish it as a monograph. Being a non-specialist, it is important for me to keep the moderate right to error one has in lectures. The origin of the text also explains the addition "for probabilists" in the title : though much of the material is accessible to the general public, I did not care to redefine Brownian motion or the Ito integral. More precisely than "Quantum Probability" , the main topic is "Quantum Stochastic Calculus" , a field which has recently got official recognition as 81825 in the Math.