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Generalized Fock spaces and Gaussian-Levy processes

Abstract

(1) Generalized Fock spaces $F_T(H)$for real contraction T on a real Hilbert space H.

(2) Anyonic Fock spaces and type B-Fock spaces.

(3) Functor of second quantization$\Gamma_T(S)$from the von Neumann algebra G_T(H) generalized by T-Gaussian operators $G(f) = a(f) + a^+(f)$, where f is in a real Hilbert spcace H and S is a real contraction.

(4)We prove that the generalized Ornstein-Uhlenbeck semigroup $U_t = \Gamma_T(exp(-t)Id)$is completely positive and in many cases of T is ultracontractive, $i.e.U_t$ maps L^2 into $L\infty$. The subject of the talk is taken from the papers together with W.Bozejko, W. Ejsmont, S.Gal.T. Hasebe, E. Lytvynov, W.Mlotkowski, I. Rodionova, Q.Xu and J. Wysoczański.

References [1] M. Bożejko and W. Bożejko. Generalized Gaussian processes and relations with random matrices and positive definite functions on permutation groups. Infin. Dimens. Anal. Quantum Probab. Relat. Top., 18(3):1550020, 19, 2015. [2] M. Bożejko, W. Ejsmont, and T. Hasebe. Fock space associated to Coxeter groups of type B. J. Funct. Anal., 269(6):1769-1795, 2015. [3] M. Bożejko, E. Lytvynov, and J. Wysoczański. Noncommutative Lévy processes for generalized (particularly anyon) statistics. Comm. Math. Phys., 313(2):535-569, 2012. [4] M. Bozejko, E. V. Litvinov, and I. V. Rodionova. An extended anyon Fock space and noncommutative Meixner-type orthogonal polynomials in the infinite-dimensional case. Uspekhi Mat. Nauk, 70(5(425)):75-120, 2015. [5], M.Bozejko, S.Gal, W.Mlotkowski, Positive definite functions on Coxeter groups with applications to operator spaces and noncommutative probability,arXiv,2017, 26 pp.