

Quasi-multiplicative positive definite functions on
Coxeter(Weyl) groups with some applications to
generalized CCR relations of type B and
operator-valued Khintchine inequality on all
Coxeter groups

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The Plan of my talk is as follows:

1. Quasi-multiplicative positive definite functions $P: W$ into \mathbb{C} , on Coxeter group (W,S) , with respect some classes of length functions L on W , i.e.:

$$P(xy) = P(x)P(y), \text{ if } L(xy) = L(x) + L(y).$$

2. Main examples of length functions- $L_1(x) = |x|$ -classical length functions . depending on S , $L_2(x) = \|x\|$ - the block length functions.
3. Type A and B Fock spaces related to positive definite functions of the form: $P(x) = q^{L(x)}$.
4. Generalized CCR relations and relations with q -Meixner-Pollaczek measures and polynomials.
5. Operator version of Khintchine inequality with coefficients from the Schatten class $S_p, 1 < p < \infty$.

References:

M.Bożejko ,W.Ejsmont, The Double Fock space for type B, arXiv, 28 March 2022.

M.Bożejko , M.Dolega, W.Ejsmont and S.R.Gal, Reflection length with two parameters in the representation theory of type B/C , arXiv 2021.

M.Bożejko, W.Ejsmont and T.Hasebe, Fock space associated with Coxeter groups of type B, J.Funct.Analysis , 2015.

M.Bożejko and R.Szwarc, Algebraic length and Poincare series on reflections groups with applications to representations theory, Lecture Notes in Math., vol.1815, Springer ,Berlin 2003.

Bożejko, Marek ; Bożejko, Wojciech ,Generalized Gaussian processes and relations with random matrices and positive definite functions on permutation groups. *Inf. Dimens. Anal. Quantum Probab. Relat. Top.* 18 (2015),

Bożejko, Marek ; Gal, Światosław R. ; Młotkowski, Wojciech ,Positive definite functions on Coxeter groups with applications to operator spaces and non-commutative probability. *Comm. Math. Phys.* 361 (2018), no. 2, 583–603

Bożejko, Marek; Ejsmont, Wiktor; Hasebe, Takahiro Noncommutative probability of type D . *Internat. J. Math.* 28 (2017), no. 2, 1750010, 30 pp.