UDC 517.5

DOUBLE SYMMETRIC ANALYTIC FUNCTIONS ON BANACH SPACES

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Let X be a complex Banach space and S be a group of isometric operators on X. We denote by $\mathcal{P}_S(X)$ the algebra of S-symmetric polynomials on X and by $H_{bS}(X)$ its closure in the topology of the uniform convergence on all balls in X. The algebra $H_{bS}(X)$ consists of all symmetric analytic functions which are bounded on all bounded subsets of X. Such algebras were studied by many authors for various Banach spaces and groups of symmetry (see e.g. [1, 2]).

Let now Y and Z be Banach spaces with symmetric bases (v_n) and (e_n) respectively, and S_Y and S_Z be groups of permutation of bases vectors in Z and Y respectively. We denote by $X = Y(Z)$ the space consisting of elements $x = (u_1, u_2, \ldots, u_n, \ldots)$, $u_n \in Z$, and $(\|u_1\|v_1+\|u_2\|v_2+\cdots+\|u_n\|v_n+\cdots) \in Y$ with

$$\|x\| = \|(\|u_1\|v_1 + \|u_2\|v_2 + \cdots + \|u_n\|v_n + \cdots)\|.$$

We say that a function f on X is (S_Y, S_Z)-symmetric or *double* symmetric if for every $\tau \in S_Y$, every $\sigma \in S_Z$, and every $n \in \mathbb{N}$

$$f(u_{\tau(1)}, u_{\tau(2)}, \ldots, u_{\tau(n)}, \ldots) = f(u_1, u_2, \ldots, u_n, \ldots),$$

$$f(u_1, u_2, \ldots, \sigma(u_n), \ldots) = f(u_1, u_2, \ldots, u_n, \ldots),$$

where

$$u_n = \sum_j z_{nj} e_j \quad \text{and} \quad \sigma(u_n) = \sum_j z_{n\sigma(j)} e_j.$$

In the talk we will discus double symmetric polynomials if both Y and Z are finitely dimensional and construct generators in algebras of double symmetric polynomials for some particular cases.

1. *Chernega I., Galindo P., Zagorodnyuk A.* The convolution operation on the spectra of algebras of symmetric analytic functions // Journal of Mathematical Analysis and Applications. – 2012. – **395**, No. 2. – P. 569–577.
2. *Kravtsiv V., Vasylyshyn T., Zagorodnyuk A.* On Algebraic Basis of the Algebra of Symmetric Polynomials on $l_p(C^n)$ // J. Funct. Spaces. – 2017. – **2017**. – P. 1–8.

http://iapmm.lviv.ua/mpmm2023/materials/ma08_03.pdf