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SPECTRA OF ALGEBRAS OF BLOCK SYMMETRIC ANALYTIC FUNCTIONS OF BOUNDED TYPE

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Let us denote by $\ell_p(\mathbb{C}^s)$, $1 \le p < \infty$ the vector space of all sequences

$$x = (x_1, x_2, \ldots, x_m, \ldots),$$

where $x_j = (x_j^{(1)}, \ldots, x_j^{(s)}) \in \mathbb{C}^s$ for $j \in \mathbb{N}$, such that the series $\sum\limits_{j=1}^{\infty} \sum\limits_{r=1}^{s} \left| x_j^{(r)} \right|^p$ is convergent. The space $\ell_p(\mathbb{C}^s)$ with norm

$$\|x\| = \left(\sum_{j=1}^{\infty} \sum_{r=1}^{s} \left| x_j^{(r)} \right|^p \right)^{1/p}$$

is a Banach space. A polynomial P on the space $\ell_p(\mathbb{C}^s)$ is called block-symmetric (or vector-symmetric) if

$$P(x_1, x_2, \ldots, x_m, \ldots) = P(x_{\sigma(1)}, x_{\sigma(2)}, \ldots, x_{\sigma(m)}, \ldots)$$

for every permutation $\sigma \in S_\infty$, where $x_j \in \mathbb{C}^s$ for all $j \in \mathbb{N}$. Let us denote by $\mathcal{P}_{vs}(\ell_p(\mathbb{C}^s))$ the algebra of all block-symmetric polynomials on $\ell_p(\mathbb{C}^s)$.

The polynomials

$$H^k(x) = H^{k_1, k_2, \ldots, k_s}(x) = \sum_{j=1}^{\infty} \prod_{\substack{r=1 \\ |k| \ge \lceil p \rceil}}^{s} (x_j^{(r)})^{k_r} \tag{1}$$

form an algebraic basis in $\mathcal{P}_{vs}(\ell_p(\mathbb{C}^s))$, $1 \le p < \infty$, where $x = (x_1, \ldots, x_m, \ldots) \in \ell_p(\mathbb{C}^s)$, $x_j = (x_j^{(1)}, \ldots, x_j^{(s)}) \in \mathbb{C}^s$.

Let us denote by $H_{bvs}(\ell_1(\mathbb{C}^s))$ the algebra of block-symmetric analytic functions of bounded type on $\ell_1(\mathbb{C}^s)$. This algebra is generated by polynomials $H^k, k \ge 1$. Let us denote by $M_{bvs}(\ell_1(\mathbb{C}^s))$ the specrum of $H_{bvs}(\ell_1(\mathbb{C}^s))$.

In this talk we will consider properties of algebraic bases of block-symmetric polynomials, intertwining operations on spectra of the algebras and representations of the spectra as a semigroup of analytic functions of exponential type of several variables.

http://iapmm.lviv.ua/mpmm2023/materials/ma08_05.pdf