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МАТЕМАТИКА, ФИЗИКА ВА АХБОРОТ ТЕХНОЛОГИЯЛАРИНИНГ ДОЛЗАРБ МУАММОЛАРИ

МАВЗУСИДАГИ РЕСПУБЛИКА МИҚЁСИДАГИ ОНЛАЙН ИЛМИЙ-АМАЛИЙ АНЖУМАНИ

ТЕЗИСЛАР ТЎПЛАМИ

the block numerical range of A with respect to $H = H_1 \oplus \cdots \oplus H_n$; for a fixed decomposition of H, we also write

$$W^n(A) = W_{H_1\oplus\cdots\oplus H_n}(A).$$

For $n=1$ the block numerical range is just the usual numerical range, for $n=2$ it is the quadratic numerical range. For $n=3$, the block numerical range is also called cubic numerical range and for $n=4$ quartic numerical range.

The next result is a straightforward generalization of the fact that the numerical range contains the quadratic numerical range [1].

Theorem 1. $W^n(A) \subset W(A)$.

We define the diagonal part T and the off-diagonal part S by

$$T := \{A_{11},..., A_{nn}\},\ S := A - T,$$

and we call A diagonally dominant of order δ_S if S is T-bounded with T-bound δ_S.

The approximate point spectrum of A is defined as

$$\sigma_{app}(A) := \{\lambda \in C : there\ exist\ (f^{(\nu)})_1^{\infty} \subset D(A), \| f^{(\nu)} \| = 1,\ (A-\lambda)f^{(\nu)} \to 0, \nu \to \infty\}.$$

In the following we give analogs of spectral inclusions for the block numerical range of diagonally dominant unbounded $n \times n$ operator matrices.

Theorem 2. $\sigma_p(A) \subset W^n(A)$.

Theorem 3. If A is a diagonally dominant $n \times n$ operator matrix of order 0, then

$$\sigma_{app}(A) \subset \overline{W^n(A)}.$$

If Ω is a component of $C \setminus \overline{W^n(A)}$ that contains a point $\mu \in \rho(A)$, then $\Omega \subset \rho(A)$; in particular, if every component of $C \setminus \overline{W^n(A)}$ contains a point $\mu \in \rho(A)$, then

$$\sigma(A) \subset \overline{W^n(A)}.$$

Since the numerical range is convex, the complement $C \setminus \overline{W(A)}$ has at most two components. The number of components of $C \setminus \overline{W^n(A)}$ for $n > 1$ is still unknown.

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IKKI O'LCHAMLI PANJARADA IKKI ZARRACHALI GAMIL'TONIANNING SPEKTRI HAQIDA

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$T = (-\pi, \pi], L_2(T^2) -\ T^2$ da aniqlangan kvadrati bilan integrallanuvchi funksiyalarning Hilbert fazosi. $L_2(T)$ fazoda quyidagi formula orqali ta'sir qiluvchi $h(k), k \in T^2, -$ o'z-o'ziga qo'shma operatorni qaraymiz:

$$h(k) = h_0(k) - V,$$

bu yerda $h_0(k)$ −operator

$$\tilde{\varepsilon}_k(p)=\sum_{i=1}^{2}\Big(\frac{1}{m_1}+\frac{1}{m_2}-\sqrt{\frac{1}{m_1^2}+\frac{2}{m_1m_2}cos2nk_i+\frac{1}{m_2^2}cos2np_i}\Big)$$

funksiyaga ko'paytirish operatori va $V-$ integral operator bo'lib, uning yadrosi

$$v(p-q)=\sum_{l=0}^{N}\sum_{i=1}^{2}\mu_{li}\,cosl(p_i-q_i)$$

funksiyadan iborat. Bu yerda m_1, m_2- zarachalarning massalari.

$$n=\begin{cases}2EKUK\{1,2,3,\dots,N-1\} & \text{agar}\quad N>1,\\ 1, & agar\quad N=1.\end{cases}$$

1-Faraz. *Faraz qilaylik,* $m=m_1=m_2$ *va* $k=(k_1,k_2)\in T^2$ *ning hech bo'lmaganda biror koordinatsi* $\pm\frac{\pi}{2n}$ *ga teng bo'lsin.*

1-Teorema. *1-farazimiz bajarilmasin. U holda quyidagi tasdiqlar o'rinli.*

1. *Agarda* $\frac{n}{2N}$ *– natural son bo'lsa, u holda ixtiyoriy* $\mu=(\mu_0,\dots,\mu_N)\epsilon R_+^{N+1}$ *uchun* $h(k)$ *operatorning muhim spektridan chapda karraliklari bilan qushib hisoblaganda* $4N+1$ *ta xos qiymati mavjud.*

2. *Agarda* $\frac{n}{2N}$ *– kasr son bo'lsa, u holda ixtiyoriy* $\mu=(\mu_0,\dots,\mu_{N-1})\epsilon R_+^{N}$ *va* $\mu_{Ni}\in M_{\alpha_i}$ *uchun* $h(k)$ *operatorning muhim spektridan chapda karraliklari bilan qushib hisoblaganda* $4N-1+\sum_{i=1}^{2}\alpha_i$ *ta xos qiymati mavjud, bu yerda*

$M_{0i}=(0;\mu^0(k)],\ M_{1i}=(\mu^0(k);\infty),\ \alpha_i\in\{0;1\}.$

2-Teorema. *1-farazimiz bajarilsin. U holda ixtiyoriy* $\mu=(\mu_0,\dots,\mu_N)\epsilon R_+^{N+1}$ *uchun* $h(k)$ *operatorning muhim spektridan chapda karraliklari bilan qushib hisoblaganda* $4N+1$ *ta xos qiymati mavjud.*

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SOME CARDINAL PROPERTIES OF SPACE OF THE PERMUTATION DEGREE AND HYPERSPACES

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Let X^n be the n th power of a compact X. The permutation group S_n of all permutations, acts on the n th power X^n as permutation of coordinates. The set of all orbits of this action with quotient topology we denote by SP^nX. Thus, points of the space SP^nX are finite subsets (equivalence classes) of the product X^n. Thus two points $(x_1,x_2,\dots,x_n)$, $(y_1,y_2,\dots,y_n)\in X^n$ are considered to be equivalent if there is a permutation $\sigma\in S_n$ such that $y_i=x_{\sigma(i)}$. The space SP^nX is called the n-permutation degree of a spaces X [1]. Equivalence relations by which we obtained spaces SP^nX and $\exp_n X$, is called the symmetric and hypersymmetric equivalence relations, respectively. Any symmetrically equivalent points X^n are hypersymmetrically equivalent. But inverse is not correct. So, for $x\neq y$ points (x,x,y), $(x,y,y)\in X^3$ are hypersimmetrically equivalent, but not symmetrically equivalent.

The concept of a permutation degree has generalizations. Let G be any subgroup of the group S_n. Then it also acts on X^n as group of permutations of coordinates. Consequently, it generates a G-symmetric equivalence relation on X^n. The quotient space of the product X^n under the G - symmetric equivalence relation, is called G-permutation degree of the space X and is denoted by SP_G^nX. An operation SP_G^n is also the covariant functor in the category of compacts and is said to be a functor of G-permutation degree. If $G=S_n$ then $SP_G^n=SP^n$. If the group G consists only of unique element then $SP_G^nX=X^n$.