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Integral Representations Of Functions That Are Holomorphic In Some Sochs

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Annotation. The concept of half-balls is introduced into the state. The polytope includes the Cauchy kernel, the invariant Poisson integral. The integral image of a holomorphic function is converted into a polyball.

Keywords: Unit ball, Unit polyball, invariant Poisson's integral, Cauchy kernel, Shilov boundary, polyball automorphism, holomorphic function, M −harmonic function.

I.Introduction

Today, the theory of functions with multiple complex variables is a rapidly developing sphere. French mathematician Henri Poincaré proved in the late 19th century that the unit sphere and polydoira were not bigolomorphic. Therefore, in this sphere, the Monographs of the famous mathematician of the United States of America Walter Rudin on polidoira on the theory of functions, as well as on the theory of functions in the unit sphere, have an important significance. This article included the Cauchy core, the invariant integral of Poisson, in the polisher, which is the cartesian product of spheres. Polisher automorphisms are included. In the polisher, an integral image of a function that is a holomorphic is obtained.

II.Main Part

In this article, we will first talk about the unit sphere automorphisms, the center of which is at the beginning of the coordinates in **c**^{N}*.Then we enter the receipts of the automorphisms of* ***B***^{M}*-unit polishar and* ***S***^{M}*-unit shartor , B*^{M}*-unit prove the theorem on the integral image of a function that is holomorphic in a polishar.*

1-§.B^M-unit polisher and S^m-unit chartor.

Suppose a unit sphere whose center in B C^m is at the beginning of the coordinates. . **B** $=\in c^m : |z|<1\}$, ∂**B** $=\{\omega\in c^m : |\omega|=1\}$, $\varphi_a(z)-$ B self-reflection of the sphere in the following form:

$$\varphi_a(z)=\frac{a-P_a(z)-\left(1-|a|^2\right)^{\frac{1}{2}}\left(z-P_a(z)\right)}{1-\langle z,a\rangle}.$$

$a\in B$, $a\neq 0$, $\varphi_a(0)=a$, $\varphi_a(a)=0$, $\varphi_0(z)=-z$, here is the kavs Ermit skalyar copy

$\langle z,w\rangle = z_1\bar{w}_1 + z_2\bar{w}_2 + z_3\bar{w}_3 + \dots + z_m\overline{w_m} = \sum_{i=1}^{m} z_i\bar{w}_i$, $|z| = \langle z,z\rangle^{\frac{1}{2}}$, and $P_a(z) = \frac{\langle z,a\rangle}{\langle a,a\rangle}a$, $a \neq 0$, $P_0(z) = 0$. $\varphi_a(0) = a$, $\varphi_a(a) = 0$ it can be easily seen that.

B^n -unit polishar and S^n -unit sharters are partial sets of c^{mn}, and $B \subset C^m$ is defined quidacically through N Cartesian multiples of unit spheres and C-unit spheres

$$B^n = \left\{ z = ({}^1z,\ {}^2z,\ \dots,\ {}^nz) \in C^{mn} :\ \sum_{j=1}^{m} |{}^iz_j|^2 < 1,\ 1 \le i \le n \right\} \text{ва}$$

$$S^n = \left\{ z = ({}^1z,\ {}^2z,\ \dots,\ {}^nz) \in C^{mn} : \sum_{j=1}^{m} |{}^iz_j|^2 = 1,\ 1 \le i \le n \right\}.$$

In general, the polisher can be viewed as the **N** Cartesian multiple of the optional radial and optional center spheres in $\mathbf{c^{mn}}$.

Shartor $\mathbf{S^n}$ Recall **n>1** at $\mathbf{S^n}$ pshartor $\mathbf{B^n}$ forms a smaller part of the boundary of the polisher, but this part is of great importance because it is the Shilov boundary.

B^n automorphismlary

Originally something from B^n

$${}^ia = (a^i{}_1, a^i{}_2, \dots, a^i{}_m)$$

we fix the number. $P_{{}^ia}$ through c^{mn} of space $[{}^ia]$ we mark the orthaganal projection in the part space, in which $[{}^ia]$ ${}^ia = (a^i{}_1, a^i{}_2, \dots, a^i{}_m)$ galleniar vectors lie in space. $[{}^ia]$ while the orthaganal complement of

$$Q_{{}^ia} = I - P_{{}^ia},\ P_0 = 0 \text{ and}$$

$$P_{{}^ia}(z) = \frac{\langle {}^iz, {}^ia\rangle}{\langle {}^ia, {}^ia\rangle} a\ a \neq 0. \qquad (1)$$

$$S_{{}^ia} = \left(1 - \left|{}^i\alpha\right|^2\right)^{\frac{1}{2}} \text{ and}$$

$$\varphi_{{}^ia} = \frac{a_i - P_{{}^ia}{}^iz - S_{{}^ia}Q_{{}^ia}{}^iz}{1 - \langle {}^iz, {}^ia\rangle}, \qquad (2)$$

If

$$\Omega = \{ z \in C^{mn} : \langle z,a\rangle \neq 1 \},$$

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it is a Holda reflection of φ_α **Ω** cmn reflection to golomorphic reflection. From $|a|<1\ da\ \overline{B^n}\subset\Omega$ this it seems to be. At $n=1, m=1,$ (2) the unit C in the formula comes to the automorphism of the circle. the unit in formula n=1, m = k (2) C^k comes to the automorphism of the sphere

B^n automorphismlary:

$B^n=\left\{z=({}^1z,\ {}^2z,\ \ldots,\ {}^nz)\in C^{mn}:\ \sum_{j=1}^{m}|{}^iz_j|^2<1,\ 1\le i\le n\right\}$ the group of automorphisms is described as follows. Such points are ${}^1a,\ {}^2a,\ldots,\ {}^ma\in\mathbf{B}$ and σ signs $\{1,2,\ldots,m\}$ the

$$w_1=e^{i\theta_1}\frac{{}^1a-P_{{}^1a}(z_{\sigma(1)})-\left(1-\left|{}^1a\right|^2\right)^{\frac{1}{2}}\left(z_{\sigma(1)}-P_{{}^1a}(z_{\sigma(1)})\right)}{1-\left\langle z_{\sigma(1)},{}^1a\right\rangle},$$

$$w_2=e^{i\theta_2}\frac{{}^2a-P_{{}^2a}(z_{\sigma(2)})-\left(1-\left|{}^2a\right|^2\right)^{\frac{1}{2}}\left(z_{\sigma(2)}-P_{{}^2a}(z_{\sigma(2)})\right)}{1-\left\langle z_{\sigma(2)},{}^2a\right\rangle},\qquad (3)$$

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$$w_n=e^{i\theta_n}\frac{{}^na-P_{{}^na}(z_{\sigma(n)})-\left(1-\left|{}^na\right|^2\right)^{\frac{1}{2}}\left(z_{\sigma(n)}-P_{{}^na}(z_{\sigma(n)})\right)}{1-\left\langle z_{\sigma(n)},{}^na\right\rangle}$$

Where θ_i i=1,n is the real numbers.

In n>1, this replacement can be used to replace $w_\gamma\to W_\mu$ extenders. Where μ=μ (γ) {1,2,...,n}

$\mu=\mu(\gamma)$ and a chivalrous reflection upon his face.

1-theorem. B^n unit polyshar's inventive aphtomorphism (3)bludges in curinish or (3) from $w_\gamma\to w_\mu$ bludges replacement of stirrers in curinish. See [9].

2-§. B^n-integral representation of a function that is holomorphic in a unit polisher

1- definition.

$C(z,\xi)=\prod_{i=1}^{n}(1-{}^iz\,{}^i\overline{\xi})^{-1}$ $\left(z\in B^n,\ \xi\in S^n\right)$ B^n The Cauchy core is called

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2- definition:

$$P(z,\xi)=\prod_{i=1}^{n}\frac{\left(1-\left|{}^{i}z\right|^{2}\right)^{m}}{\left|1-\left\langle {}^{i}z,{}^{i}\xi\right\rangle\right|^{2m}} \qquad \left(z\in B^{n},\ \xi\in S^{n}\right)(4)$$

Poisson's invariant core in B^n is called.

From the above definition it is seen that the Poisson and Cauchy nuclei can be connected using the following formula.

$$P(z,\xi)=\frac{C(z,\xi)C(\xi,z)}{C(z,z)}(5)$$

The Poisson integral $P[f]$, for (in this $f\in L^{1}(\sigma)$ $z\in B^{n}$), is defined as follows.

$$P[f](z)=\int_{S^n}P(z,\xi)f(\xi)d\sigma(\xi) \qquad (6)$$

in addition to

$$P[\mu](z)=\int_{S^n}P(z,\xi)d\mu(\xi) \qquad (7)$$

μ on the scale will be the Poisson integral.

3-description. A($\overline{B^n}$) through **f:**$\overline{B^n}\to C$ B^n *was holomorphic in and* $\overline{B^n}$ we designate an algebra that is continuous.

1- theorem. If f$\in$ **A($\overline{B^n}$)** if, then

$$f(z)=P[f](z)$$

equality is appropriate for all z$\in B^n$.

Proof . we select z$\in B^n$ and based on (4

$$g(\omega)=\frac{C(\omega,z)}{C(z,z)}f(\omega) \quad (\omega\in\overline{B}^{n}).$$

if $g\in A(B^{n})$ and $f(z)=g(z)$.

(4) and (5) using

$$f(z)=\int_{S^n}C(z,\xi)g(\xi)d\sigma(\xi)=\int_{S^n}P(z,\xi)f(\xi)d\sigma(\xi)$$

comes from being. Theorem proved.

2- Theorem. If F(z)$\in$ **A($\overline{B^n}$)** if, then

$$F(z)=\int_{S^n}C(z,\xi)F(\xi)\sigma(\xi)$$

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equalit$\in B^n$.

Conclusion

As a conclusion, it can be said that the analysis of research in this area has shown that to date, the article has not sufficiently studied the question of the Cauchy core in a polisher with a Cartesian multiple of spheres, the invariant integral of Poisson , polisher automorphisms , the integral image of a function with a golomorphic in a polisher.There are a number of issues waiting for its solution in this SoC.For example, in the polisher stands the theory of separat M-harmonic functions.

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