İSTANBUL ANALYSIS SEMINARS

INTERNAL POLYA INEQUALITY IN SEVERAL VARIABLES

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Abstract: Suppose f is a function analytic in a domain $\overline{\mathbb{C}} \setminus K$, where $K \subset \mathbb{C}$ is a polynomially convex compact set, with Taylor expansion $f(z) = \sum_{k=0}^{\infty} \frac{a_k}{z^{k+1}}$ at ∞, and $H_s(f) := \det(a_{k+l})_{k,l=0}^{s}$ are related Hankel determinants. The classical Polya theorem (1929) says that

$$D(f) := \limsup_{s\to\infty} |H_s(f)|^{1/s^2} \leqslant d(K),$$

where $d(K)$ is the transfinite diameter of K introduced by Fekete in 1923.

In our talk will be considered some multivariate internal analogs of this result. They are based on the generalized Polya inequality for compacta [1] and on the notion of internal transfinite diameter $d(a, \partial D)$ of the boundary of a domain $D \subset \mathbb{C}^n$ viewed from a given point $a \in D$ (suggested in [2] and slightly modified here).

The presented results are joint with Ozan Günyüz.

References

[1] V. Zakharyuta, "Transfinite diameter, Chebyshev constants, and capacities for a compactum in $\mathbb{C}^n$," *Mat. Sb. (N.S.)* **96 (138)** (1975), 374–389.

[2] V. Zakharyuta, "Internal characteristics of domains in $\mathbb{C}^n$," *Ann. Polon. Math.* **111** (2014), no. 3, 215–236.

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