

İSTANBUL ANALYSIS SEMINARS

CAPACITY DIMENSION OF THE BRJUNO SET

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Abstract: The set \mathcal{B} of Brjuno numbers arises in connection with the problem of linearization of holomorphic germ $f(z) = \lambda z + a_2 z^2 + \dots$ in a neighborhood of point $z = 0$:

$$\varphi(z) \circ f(z) \circ \varphi^{-1}(z) = \lambda z, \quad (1)$$

where φ is a germ of a holomorphic function in the neighborhood of $z = 0$, $\varphi'(0) \neq 0$. This problem is important in Complex Dynamics, to describe the dynamics of $f^n = f \circ \dots \circ f$ in a neighborhood of a fixed point. For $|\lambda| \neq 0, 1$ the linearization (1) is always possible, according to the theorem G. Königs. However, for $\lambda = e^{2\pi\alpha i}$ with irrational $\alpha \in \mathbb{R}$, the question is answered in terms of Brjuno numbers by A.D. Brjuno and J.-C. Yoccoz. We will prove that the complement $\mathbb{R} \setminus \mathcal{B}$ of the Brjuno set has zero C_σ -capacity with respect to the kernel $k_\sigma(z, \xi) = |\ln |z - \xi||^\sigma$, $\sigma > 2$.

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