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Growth of the Poisson-Stieltjes integral in a polydisc

Let $U^n = \{z \in C^n : |z| < 1\}$, $T^n = \{z \in C^n : |z_j| = 1,\ 1 \le j \le n\}$, $|z| = \max\{|z_j| : 1 \le j \le n\}$ be the polydisk norm in $C^n, n \in N$, $z_j = r_j e^{i\varphi_j}$, $w_j = e^{i\theta_j}$.

Let $M_\infty(r_1, \ldots, r_n, u) = \max\{|u(z_1, \ldots, z_n)| : |z_j| \le r_j\}$, $0 \le r_j < 1$, where $u(z_1, \ldots, z_n)$ is the Poisson-Stieltjes integral [1] of Borel measure μ.

We say that $\mu \in \Lambda_{\gamma_1, \ldots, \gamma_n}$, $\gamma_j \in (0,1)$ if

$$\sup_{\varphi \in [-\pi, \pi]^n} \mu\left(\left\{w \in T^n : |\theta_j - \varphi_j| \le \delta_j\right\}\right) = O\left(\left(\delta_1^{\gamma_1} \cdots \delta_n^{\gamma_n}\right)\right), \quad \delta_j \downarrow 0.$$

We investigate the growth of $M_\infty(r_1, \ldots, r_n, u)$ in the terms of the modulus of continuity of a measure.

[1] Rudin W. Function theory in polydiscs. – New York-Amsterdam: Math. Lectures Note Series, 1969.