İSTANBUL ANALYSIS SEMINARS

DUALITY RESULTS FOR HARDY SPACES ON STRONGLY CONVEX DOMAINS WITH SMOOTH BOUNDARY

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Abstract: For bounded, strictly convex domains $\Omega \subset \mathbb{C}^n$ with $\mathcal{C}^3$-boundary we prove that

$$(H^p(\Omega))' = H^q(\widetilde{\Omega}),$$

where $\frac{1}{p} + \frac{1}{q} = 1$, $p > 1$, and $\widetilde{\Omega}$ is the generalized dual of the domain Ω. The set $\widetilde{\Omega}$ plays the role of the *exterior* of the domain Ω with respect to the linear convexity. Furthermore, the isomorphism is realized as the boundary value case of the classical Köthe-Silva duality, by

$$F(f) = F_\phi(f) = \int_{\partial\Omega} \phi(w) \, f(z) \, \omega(z,w),$$

where $\phi \in H^q(\widetilde{\Omega})$, $f \in H^p(\Omega)$, and ω, w are suitably defined differential forms. (Joint work with L. Aizenberg and V. Gotlib.)

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