İSTANBUL ANALYSIS SEMINARS

CAUCHY-FANTAPPIE-TYPE PROJECTIONS AND DUALITY ON POLETSKY-STESSIN HARDY SPACES OF COMPLEX ELLIPSOIDS

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Abstract: Poletsky-Stessin Hardy spaces, defined in [2], are the natural generalizations of Hardy spaces on hyperconvex domains and the Cauchy-Fantappie projections are the n-dimensional analogs of Cauchy integral of the one variable theory. In the first part of this talk we will consider the boundedness and compactness properties of Cauchy-Fantappie-type projections on Poletsky-Stessin Hardy spaces $H_u^p(\mathbb{B}^{\mathbf{P}})$ of complex ellipsoids. We show that the boundedness and compactness of these operators can be characterized through the conditions known as Carleson conditions. This characterization enables us to relate the PS-Hardy spaces generated by an arbitrary exhaustion function φ to the $H_u^p(\mathbb{B}^{\mathbf{P}})$ for which we have a better understanding. In the second part of the talk, we will mention Grothendieck-Köthe-da Silva duality for the spaces of holomorphic functions defined in a convex domain and then using a general characterization of dual complements of Reinhardt domains by [1], we give the dual complement of some special type of complex ellipsoids. Moreover, we present a duality result for Poletsky-Stessin Hardy space of complex ellipsoid analogous to that of [1] on classical Hardy spaces.

References

[1] L. Aizenberg, V. Gotlib & A. Vidras, "Duality for Hardy spaces in domains of $\mathbb{C}^n$ and some applications," *Complex Anal. Oper. Theory* **8** (2014), no. 6, 1341-1366.

[2] Evgeny A. Poletsky & Michael I. Stessin, "Hardy and Bergman spaces on hyperconvex domains and their composition operators," *Indiana Univ. Math. J.* **57** (2008), no. 5, 2153-2201.

[3] S. Şahin, *Monge-Ampère Measures and Poletsky-Stessin Hardy Spaces on Bounded Hyperconvex Domains*, PhD Dissertation, Sabancı University, 2014.

[4] S. Şahin, "Poletsky-Stessin Hardy spaces on complex ellipsoids in $\mathbb{C}^n$," arXiv: 1403.2506 (2014).

[5] S. Şahin, "Cauchy-Fantappie type projections and duality on Poletsky-Stessin Hardy spaces of complex ellipsoids," preprint (2014).

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