EXCEPTIONAL SETS FOR HARDY SOBOLEV SPACES IN SEVERAL COMPLEX VARIABLES

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The class of holomorphic Hardy Sobolev spaces in the unit ball of $\mathbb{C}^n$ is a family of spaces including the Hardy, Drury Arveson, Bergman and Dirichlet space.

In this talk we will focus on questions regarding exceptional sets both from function theoretic and a functional analytic perspective. These two approaches have led to the past in two different notions of exceptional sets. From the point of view of function theory, exceptional sets are sets where a function in the corresponding Hardy Sobolev space fails to have admissible limits and can be characterized as a null sets for some appropriately defined capacity [1]. While from the functional analysis perspective null sets, called totally null sets, play the role of Lebesgue measure zero sets in the Sz.-Nagy-Foias $H^\infty(\mathbb{D})$ functional calculus [2]. Our main theorem [3] proves the equivalence of the two notions. We will discuss also some interesting corollaries.

References

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[2] Kelly Bickel, Michael Hartz and John E. McCarthy, *A multiplier algebra functional calculus*, Trans. Amer. Math. Soc., pp. 8467-8482, 2018.

[3] Nikolaos Chalmoukis and Michael Hartz, *Totally null sets and capacity in Dirichlet type spaces*, To appear in: J. London Math. Soc., 2022

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