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Cesàro summability of Taylor series in weighted Dirichlet spaces

A recent result of J. Mashreghi and T. Ransford has shown that, for a weighted Dirichlet space \mathcal{D}_ω where $\omega : \mathbb{D} \rightarrow (0, \infty)$ is a superharmonic function on the unit disk \mathbb{D} , the Cesàro means of order 1 of the partial sums $s_n[f]$ of the Taylor expansion of a function $f \in \mathcal{D}_\omega$ converge to the function in the norm of the space. However, it is known that, for certain weights ω , the partial sums themselves fail to converge. This leads us to the following question : Do the Cesàro means of order $\alpha > 0$ of $s_n[f]$ converge to f in the space \mathcal{D}_ω for any superharmonic weight ω ?

In this talk, I will present the following result for the spaces \mathcal{D}_ω : If $\alpha > \frac{1}{2}$, the Cesàro means of order α always converge to the function f in any space \mathcal{D}_ω , but if $\alpha \leq \frac{1}{2}$, it breaks down for some superharmonic weight ω . This result contrasts with what is known on Cesàro means of order $\alpha > 0$ in the disk algebra and the Hardy space H^1 . (Joint work with Javad Mashreghi and Thomas Ransford).