The Cauchy Integral in $\mathbb{C}^n$

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Abstract

The classical Cauchy integral is a fundamental object of complex analysis whose analytic properties are intimately related to the geometric properties of its supporting curve.

In this talk I will begin by reviewing the most relevant features of the classical Cauchy integral. I will then move on to the (surprisingly more involved) construction of the Cauchy integral for a hypersurface in $\mathbb{C}^n$.

I will conclude by presenting new results joint with E. M. Stein concerning the regularity properties of this integral and their relations with the geometry of the hypersurface.

(Time permitting) I will discuss applications of these results to the Szegő and Bergman projections (that is, the orthogonal projections of the Lebesgue space $L^2$ onto, respectively, the Hardy and Bergman spaces of holomorphic functions).

References


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