Marshall University Department of Mathematics
Advanced Research Initiative

Invited Speaker

Dr. James Brennan

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University of Kentucky

"The Property of Unique Continuation in Certain Spaces Spanned by Rational Functions on Compact Nowhere Dense Sets"

Tuesday, October 25, 2022 • Smith Hall 511 • 4:00pm

Abstract

It has been known for over a century that certain large classes of functions defined on a compact nowhere dense subset X of the complex plane, and obtained as limits of analytic functions in various metrics, can sometimes inherit the property of *unique continuation* characteristic of the approximating family. The first example of the transfer of the uniqueness property in this way to $R(X)$, the space of functions that can be uniformly approximated on X by a sequence of rational functions whose poles lie outside of X, was obtained by M. V. Keldysh around 1940, but apparently never published. Years later in 1975 A. A. Gonchar exhibited a qualitatively definitive improvement of Keldysh's example. My goal here is to present a survey of the early results on the uniqueness question, beginning with its origin at Emile Borel's thesis defense of 1894, concluding with a brief summary of its impact on the general theory of approximation by analytic functions.

A reception with light refreshments will be held immediately following the talk