



Mathematics & Statistics Colloquium

Friday, December 11, 2020, 4:15pm-5:15pm

Zoom Meeting ID: 941 6389 5998

Password (if prompted): 371814



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Simplifying Constructions in Topology, Analysis, and Probability

Abstract. It has been three score years since infinitesimals became legitimate with Abraham Robinson's enlargement of the real number system. Subsequent research employs a productive interplay between standard mathematical systems and their larger, parallel, nonstandard systems. New topological spaces, Banach spaces and measure spaces have been constructed in standard mathematics from similar nonstandard objects. We will illustrate this constructive process with applications to an important boundary, harmonic functions, and Brownian motion on the open unit disk in the plane.

Biographical Sketch. Peter Loeb's 1965 PhD in mathematics is from Stanford University. He held a faculty position at UCLA until beginning his faculty positions in 1968 in Illinois. He has held various visiting positions including semesters at Yale, Rutgers, Chalmers University in Sweden, the California Institute of Technology, Tokyo Science University, and the University of Alberta. His research interests center on real analysis and application of nonstandard models to real analysis. His research often uses measure spaces that are called "Loeb spaces" in the literature. He, and many others, have used these methods in areas such as potential theory, stochastic processes, mathematical economics, and mathematical physics.