ALEX BRUDNYI, University of Calgary

Ultrametric Spaces, Spaces of Balls, and Pluripotential Theory

In pluripotential theory, capacity provides a means of measuring the "size" of sets in a way that is compatible with their complex-analytic properties, making it an essential tool in many problems arising in the theory of functions of several complex variables. The notion of capacity originated in the theory of functions of one complex variable and was subsequently extended to the multivariable setting through the work of several distinguished mathematicians. In the higher-dimensional context, the principal quantities of interest include the Chebyshev constant, the Robin constant, and the transfinite diameter. The study of these quantities is intimately related to the behavior of certain extremal plurisubharmonic functions. In this talk, I introduce a novel approach to capacity theory based on the geometry of specific ultrametric spaces and the metric spaces formed by their unit balls. This framework provides new insights into classical problems and establishes connections with other areas of analysis and geometric function theory.