Harmonic functions and stochastic processes with jumps

Ante Mimica

Abstract: Since the last century a link between differential operators and stochastic processes has been established and it is given through the infinitesimal generator of a stochastic process. In this sense, the Laplace operator in R^d corresponds to the standard Brownian motion in R^d. In this lecture we consider integro-differential operators and corresponding stochastic processes, that need not have continuous paths like Brownian motion. We explain probabilistic techniques that can be useful in proving local continuity properties of harmonic functions.

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