

Special Colloquium



DR. CAMELIA POP
UNIVERSITY OF PENNSYLVANIA

"HARNACK INEQUALITIES FOR DEGENERATE DIFFUSIONS"

We will present probabilistic and analytic properties of a class of degenerate diffusion operators arising in population genetics, the so-called generalized Kimura diffusion operators. Such processes arise as models for the evolution of gene frequencies. We will start by highlighting the main questions of interest and the mathematical difficulties in addressing them. Our main results are a stochastic representation of weak solutions to a degenerate parabolic equation with singular lower-order coefficients, and the proof of the scale-invariant Harnack inequality for nonnegative solutions to the Kimura parabolic equation. The stochastic representation of solutions that we establish is a considerable generalization of the classical results on Feynman-Kac formulas concerning the assumptions on the degeneracy of the diffusion matrix, the boundedness of the drift coefficients, and on the a priori regularity of the weak solutions.

This is joint work with Charles Epstein.

Wednesday, February 11th, 2015

Room 284, the 2nd Floor of the Surge Building

Tea Time @ 3:40 p.m.

Talk Begins @ 4:10 p.m.

Ends @ 5:00 p.m.

UCR

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