



KOÇ UNIVERSITY

Math-Science Seminar

Speaker: Halil Mete Soner (Department of Mathematics, Koç University)

Title: Vortex lines, Brownian motion and geometric flows.

Date and Time: Thursday, April 5, 4:45 pm.*

Place: Room Z42, Science Building, Koç University, Rumelifeneri Yolu, Sariyer 80910 Istanbul, Turkey.

Abstract: Time evolution of several diverse phenomenon such as vortex lines in superconductors, grain or phase boundaries, crystal growth can be modeled by geometric equations. Simplest of these flows is the curve shortening equation for a space curve. As the name suggests, these curves evolve in time as to decrease their total length in the most efficient way. Mathematically the geometric equation states that the velocity vector is equal to the curvature vector. Other geometric flows are also of this form connecting the velocity to a possibly nonlinear function of the curvature tensor. In the past decade geometric equations received considerable attention and found several additional applications in image processing and in general relativity. Most recently, a stochastic representation is found through examples in mathematical finance. This will be a survey talk, emphasizing the basic definitions and several applications. The stochastic representation will also be discussed.

*Refreshments to be served in Science Building, Room Z40 at 4:30 pm.