

Mathematics and Physics Seminar Series



Announcing

A Seminar Presentation
on Friday

February 9, 2018

at 1:45 pm - 2.30 pm in

Maxcy 212

at The University of New Haven

Coupling Brownian motion on the Heisenberg group and its applications to gradient estimates

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Abstract: Brownian motion is a mathematical model for the random movement of a particle. It was first observed by Robert Brown in 1827 while looking at pollen grains through a microscope. Shizuo Kakutani, in 1944, was the first to show a connection between Brownian motion and harmonic functions (which are solutions to Laplace's equation). We construct a successful non-Markovian coupling (where the coupled processes meet almost surely) of Brownian motions on the Heisenberg group, which is the simplest nontrivial example of a sub-Riemannian manifold. Sub-Riemannian manifolds often occur in the study of constrained systems, such as the motion of a car on a surface. We use this coupling to furnish purely analytic gradient estimates for harmonic functions on the Heisenberg group by purely probabilistic means. This talk is based on joint work with Sayan Banerjee and Maria Gordina

Further Information

For further information, please contact Dr. Yasanthi Kottegoda at the Department of Mathematics and Physics, Office: Maxcy 315, 203-932-1206, YKottegoda@newhaven.edu.