



Department of Decision Sciences
Statistics Seminar

Sphere stepping algorithms for Dirichlet-type problems with the fractional Laplacian

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Abstract

We review the sphere-stepping algorithm for simulating the solution to the classical Dirichlet problem and consider whether the same can be done when the Laplacian can be changed to the fractional Laplacian. Whereas in the former case, we need knowledge about isotropic Brownian motion, in the latter case, we need information about isotropic stable Levy processes. We will show that the stable case offers a faster convergence than in the Brownian case thanks to the trajectory of stable processes having jumps.