Institut für
Mathematische Stochastik

Georg–August–Universität

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1. November 2005

Einladung

Im Stochastik-Kolloquium spricht

Prof. Dr. Peter Imkeller

Humboldt-Universität Berlin

über das Thema

Lévy noise induced transitions

Der Vortrag findet statt am

Mittwoch, 16. November 2005 um 11:15 Uhr

im

Seminarraum der Stochastik, Maschmühlenweg 8 - 10

Es laden ein: die Dozenten des Instituts für Mathematische Stochastik

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Abstract:
A spectral analysis of the time series representing average temperatures during the last ice age featuring the Dansgaard-Oeschger events reveals an α-stable noise component with an α ~ 1.78. Based on this observation, papers in the physics literature attempted a qualitative interpretation by studying diffusion equations that describe simple dynamical systems perturbed by small Lévy noise. We study the exit problem for solutions of stochastic differential equations of this type from bounded or unbounded intervals which contain the unique asymptotically stable critical point of the dynamical system without noise. Using probabilistic estimates we show that in the small noise limit $\epsilon \to 0$, the exit time from an interval is an exponentially distributed random variable and determine its expectation. Due to the heavy-tail nature of the α-stable component of the noise, the results differ strongly from the well known case in which the deterministic dynamical system undergoes purely Gaussian perturbations.