Einladung

zum

Oberseminar Stochastik

am Mittwoch, dem **14. Februar 2018**, um **17 Uhr** im **Seminarraum 2**
des Mathematischen Instituts (Raum 204), Weyertal 86–90, 50931 Köln

Es spricht

Siva Athreya
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zum Thema

Small noise limit for singularly perturbed diffusions.

We consider a simultaneous small noise limit for a singularly perturbed coupled diffusion described by

$$X_t^\varepsilon = x_0 + \int_0^t b\left(X_s^\varepsilon, Y_s^\varepsilon\right)ds + \varepsilon^\alpha B_t,$$
$$Y_t^\varepsilon = y_0 - \frac{1}{\varepsilon}\int_0^t \nabla_y U(X_s^\varepsilon, Y_s^\varepsilon)ds + \frac{s(\varepsilon)}{\sqrt{\varepsilon}}W_t,$$

where $x_0 \in \mathbb{R}^d$, $y_0 \in \mathbb{R}^m$, B_t, W_t are independent Brownian motions,
$b\colon \mathbb{R}^d \times \mathbb{R}^m \to \mathbb{R}^d$, $U\colon \mathbb{R}^d \times \mathbb{R}^m \to \mathbb{R}$, and $s\colon (0,\infty) \to (0,\infty)$.

One observes that there is a time scale separation between X and Y. Under suitable assumptions on b, U, for $0 < \alpha < \frac{1}{2}$, if $s(\epsilon) \to 0$ goes to zero at a prescribed slow enough rate then we establish all weak limits points of X^ϵ, as $\epsilon \to 0$, as Fillipov solutions to a differential inclusion.

This is joint work with V. Borkar, S. Kumar and R. Sundaresan.

Alle Interessenten sind herzlich eingeladen.

Die Dozenten der Stochastik