THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
MATHEMATICAL SCIENCES COLLOQUIUM

Dr. Parisa Fatheddin

The Department of Mathematical Sciences
The University of Alabama in Huntsville

Moderate Deviation Principle and Central Limit Theorem for a Class of SPDEs

DATE: Friday, September 19, 2014

TIME: 3:00 p.m. – 4:00 p.m.

PLACE: Shelby Center 218

A class of Stochastic Partial Differential Equations (SPDEs) with non-Lipschitz continuous coefficient of the form,

$u_t^{\epsilon}(\mathrm{y}) = \mathrm{F(y)} + \sqrt{\epsilon}\ \int_O^t \int_U\ G\big(a, y, u_s^{\epsilon}(y)\big) W(dsda) + \int_0^t \frac{1}{2} \Delta u_s^{\epsilon}(y) ds$

with conditions,

$$\int_U\ |G(a, y, u_1) - G(a, y, u_2)|^2\ \lambda(da)\ \leq K\ |u_1 -\ u_2|,$$

$$\int_U\ |G(a, y, u)|^2\ \lambda\ (da)\ \leq K(1 +\ |u|^2),$$

is introduced, where $u_1, u_2, u, y\ \in \mathbb{R}, F$ is a function on $\mathbb{R}, \mathrm{G} : U\ \times\ \mathbb{R}^2\ \rightarrow\ \mathbb{R}$ with $U \subset \mathbb{R}$ and $0 <\ \epsilon\ < 1$. Moderate Deviation Principle and Central Limit Theorem are derived for this class, and as applications, these theories are achieved for two commonly studied population models: super-Brownian motion and Fleming-Viot Process.

Refreshments will be served at 2:30 p.m. in SC 201 suite landing.