hausdorff CENTER FOR MATHEMATICS

5th International Conference on Stochastic Analysis and its Applications

September 5–9, 2011

universitätbonn

The conference at University of Bonn, Germany, is the 5th in a series of international conferences on Stochastic Analysis and its Applications. The previous ones took place in Seattle (2006), Seoul (2008), Beijing (2009) and Osaka (2010).

The conference is supported by Hausdorff Center for Mathematics and it is co-sponsored by Global Center of Excellence at Kyoto University and by the Collaborative Research Center SFB 611 at Bonn University.

News

- Registration starts on Monday at 8.00h in the conference office at Wegelerstrasse 10.
- All lectures will take place in the former building of the mathematics department at Wegelerstrasse 10.
- Wireless internet access and a computer pool will be available at Wegelerstrasse 10.
- The reception starts on Monday 19.00h in the new building of the mathematics department at Endenicher Allee 60.

Program Updates

Monday

- 15.05 B2: E. Hausenblas: cancelled
- 15.10 b3: N. Englezos: cancelled

Wednesday

- 11.40 g6: G. Torbin cancelled

Thursday

- 9:00 P4: S. Peng: BSDE, nonlinear expectation and path PDE
- 14.40 M23: T. Lyons (moved from Friday)
- 16.50 m1: P. Yam (moved from Friday)

Friday

- 09.00 M20: B. Driver (moved from Thursday)
- 14.40 m3: P. Moreno (moved from 15.10)

Sessions and Scientific Board

A. **Dirichlet forms and stochastic analysis** (Zhen-Qing Chen)
B. **Jump processes** (René Schilling)
C. **Stochastic partial differential equations** (Michael Röckner)
D. **Stochastic analysis and geometry** (David Elworthy)
E. **Optimal transport and allocation problems** (Karl-Theodor Sturm)
F. **Functional analysis** (Michel Ledoux)
G. **Random media, percolation clusters and fractals** (Takashi Kumagai)
H. **Stochastic models in physics and biology** (Anton Bovier)

These areas are strongly related to each other and have been very active in recent years. They occupy a central place in modern probability theory and analysis. The primary goal of the conference is to bring researchers in areas listed above, from all over the world, to survey the fields, exchange ideas and to foster future collaborations. Another important goal is to expose young researchers and Ph.D students to the most recent developments in active areas of probability theory.

Perturbed rotation of a rigid body close to the lagrange case under stochastic oscillations of point of support

DMYTRO LESHCHENKO
Odessa State Academy of Civil Engineering and Architecture

Perturbed rotation of a rigid body, similar to regular precession in the Lagrange case, under stochastic vertical oscillations of point of support is investigated. Motion of a body under the action of a restoring torque depending on slow time, as well as perturbation torque slowly varying with time, are studied. It is assumed that the angular velocity of the body is fairly large, its direction is close to the dynamics axis of symmetry of the body and the perturbation torques are small compared with the restoring torques. It is assumed that acceleration of point of support includes periodic and stochastic components.

A small parameter is introduced in a special way and the averaging method is used. The averaged system of equations of motion is obtained in the first approximation for the essentially nonlinear two-frequency system.

Note that, if we confine ourselves to constructing the first approximation, then the formulas for the nutation and precession angles do not contain parameters of the perturbation torques, and therefore the effect of perturbations on regular precession of the body will not be taken into account. In this case, therefore, construction of the second approximation is essential. Evolution of the nutation and precession angles is defined at the second approximation of the averaging method. In the expression for the nutation angle the bounded oscillation term contains nonzero initial data. For the precession angle the resultant terms one of which depends on the expression for the angular precession velocity that is known from approximate gyroscope theory.

Thus, the new class of motion of axially symmetric body with regard to nonstationary restoring and perturbation torques is investigated. Problem of rotation of a rigid body, meaning for applications is solved.

h9 *Thu. 12.35-12.50 – TP*