Nerve Cell Model and Asymptotic Expansions

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Date: 2 May 2013 (Thursday)
Time: 3.00 pm – 4.00 pm
Venue: MAS Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

We construct a nerve cell model with a stochastic noise based on the simplified Hodgkin-Huxley model. In this model the noise factor consists of the jump-diffusion with a small parameter epsilon. Here the diffusion part consists of the Wiener process with variable coefficient, and the jump part consists of the compound Poisson process. We make compositions of noise processes with functions (tempered distributions). Using Malliavin calculus for jump-diffusion processes, we make an asymptotic expansion associated with this model as epsilon tends to 0.

Speaker Biography

Yasushi Ishikawa is an Associate Professor in the Department of Mathematics of Ehime University, Japan. He was a visiting associate professor at the institute of mathematical statistics (Tokyo) during 2002/04-2004/03. He has been a member of the Japan-France cooperative research activity during 2005/09-2007/08. His main field of research is stochastic analysis on the Wiener-Poisson space and for jump processes.

Host: Prof. Nicolas Privault, Division of Mathematical Sciences, School of Physical and Mathematical Sciences