Seminarium Zespołu Matematyki Obliczeniowej i Metod Probabilistycznych

W dniu 10 maja 2016 r. (wtorek) o godz. 12:00
w sali 303 (w łączniku A3-A4)

Prof. Stefan Heinrich

(University of Kaiserslautern, Niemcy)

wygłosi referat pt.

"Parametric stochastic problems – algorithms and complexity"

Serdecznie zapraszamy!

Abstract: We survey recent results on the strong solution of parameter dependent problems of stochastic computation. We consider strong approximation of definite and indefinite stochastic integrals and strong solution of stochastic differential equations. Our goal is to find numerical approximations for all parameter values simultaneously.

These problems are approached within a general scheme of solving parameter dependent numerical problems by multilevel methods, developed previously by T. Daun and the author in a series of papers. First we study algorithms and obtain convergence results for Banach space valued analogues of the scalar problem. This is usually connected with certain Banach space geometry. Then a multilevel scheme is developed involving two embedded Banach spaces, balancing discretization with approximation of the embedding. Finally, the parametric problem is represented as a particular case of this Banach space setup, from which a multilevel method for the solution of the considered parametric problem results.

We obtain convergence rates for various smoothness classes of input functions. Furthermore, the optimality of these rates is established by proving matching lower bounds. Thus, the complexity is established in the sense of information-based complexity theory.

In this talk emphasis is laid on the Banach space setup on one hand and on lower bound techniques on the other.