Preface

Stochastic analysis occupies a central place in modern probability theory. Besides its intrinsic value as an area of mathematical research, its importance also derives from the interplay with many other areas of mathematics as well as disciplines of sciences and engineering, including harmonic analysis, partial differential equations, functional analysis, differentiable geometry, mathematical physics, economics, finance and biology, to name just a few. Chinese mathematicians have made many fundamental contributions in the diverse areas of stochastic analysis such as Dirichlet form theory, stochastic analysis on Riemannian manifolds and stochastic (partial) differential equations.

Young Chinese probabilists represent the future of probability theory in China and they have already made remarkable progress in stochastic analysis in particular. To promote further development of stochastic analysis and its related fields, *Acta Mathematica Sinica* decided to publish a special issue on stochastic analysis. The issue contains 10 invited research papers from young Chinese scholars working in stochastic analysis and related areas. These papers represent a sample of recent developments in stochastic analysis and cover a wide range of topics: random matrices, nonlinear stochastic partial differential equations, regularity estimates on singular stochastic systems, backward stochastic partial differential equations and nonlinear partial differential equations, potential theory of Markov processes, regime-switching stochastic differential equations and hybrid stochastic systems, and ergodicity and functional inequalities.

We are grateful to all the authors who chose to publish their work in this special issue. We appreciate the help from the reviewers for contributing their time to the special issue. Finally we thank the editorial office of *Acta Mathematica Sinica*, especially Dr. Chanyu Shang, for their excellent editorial work.

Guest Editors:

Zhen-Qing Chen (University of Washington, USA)

Elton P. Hsu (Northwestern University, USA)

Fengyu Wang (Tianjing University, China)