

Preface

This volume is the product of the first conference of the Seasonal Institute of the Mathematical Society of Japan titled,

“Probabilistic Approach to Geometry”
28th July 2008 – 8th August 2008
Kyoto University, Japan.

The conference was organized by the Society’s committee — Motoko Kotani (Tohoku University), Hitoshi Arai (University of Tokyo), Takashi Kumagai (Kyoto University) and Karl-Theodor Sturm (Universität Bonn) — in collaboration with the local organizing committee at Kyoto University — Takashi Kumagai, Masanori Hino, Tsuyoshi Kato and Shin-ichi Ohta.

The conference focused on the interaction between Geometry and Probability Theory, and the development of new directions in both research fields. To achieve this aim, survey lectures were given by leading researchers in one of the following four themes selected by the organizers:

Rough Path Analysis:

Shigeki Aida (Osaka University),
Terry J. Lyons (University of Oxford)

Theory of Random Groups:

Yann Ollivier (École Normale Supérieure de Lyon)

Heat Kernel Analysis:

Laurent Saloff-Coste (Cornell University)

Mass Transport Problems:

Cédric Villani (École Normale Supérieure de Lyon)

Based on these themes, thirty-three invited talks and thirteen contributed talks were also presented along with active and fruitful discussions by the 180 participants, one third of whom were from abroad.

The editors and conference organizers thank the Mathematical Society of Japan, and the Japan Society for the Promotion of Science (JSPS) for financial support through the Grant for International Scientific Meetings in Japan and a Grant-in-Aid for Scientific Research. We would also like to express our gratitude to the staff of the Mathematical Society of Japan for the efficient handling of the conference and the publication of this volume. Last but not least, we extend our most sincere thanks to all