

## Preface

This volume is a collection of the research manuscripts written by the invited speakers of the Taniguchi Conference on Mathematics, Nara '98, which was held on December 15–20, 1998 at the Nara Prefectural Cultural Hall, Nara, Japan. The invited speakers were Hitoshi Arai, Spencer J. Bloch, Richard E. Borcherds, Kenji Fukaya, Mikio Furuta, Yoshikazu Giga, Masaki Kashiwara, Kazuya Kato, Janos Kollar, Maxim Kontsevich, Shigeo Kusuoka, Pierre-Louis Lions, George Lusztig, Paul G. Malliavin, Shinichi Mochizuki, Shigefumi Mori, Adrian Ocneanu, Kyoji Saito, Yum-Tong Siu and Srinivasa S. R. Varadhan.

The members of the organizing committee were Akira Fujiki, Mitsuru Ikawa, Kiyoshi Ito, Michio Jimbo, Shigeo Kusuoka, Masaki Maruyama, Shingo Murakami, Junjiro Noguchi, Kazuo Okamoto, Kyoji Saito, Toshikazu Sunada and Kenji Ueno.

For more than 20 years, Taniguchi Symposia of Mathematics had been held every year under the auspices of the Taniguchi Foundation chaired by Professor Kiyoshi Ito and the late Professor Shingo Murakami. The main objective of these symposia was to create opportunities for many mathematicians in Japan and foreign countries to exchange their ideas and research findings. More detailed accounts regarding the history, objectives and significant contributions of the Taniguchi Foundation is provided by Professor Shingo Murakami after this preface.

The set up of the Taniguchi Foundation ceased in 1999. In order to commemorate its many years of financial support to the mathematics activities, we decided to hold this final Conference which aimed to gather together people in mathematics who have ever attended (participated) in Taniguchi Symposia. The areas of subjects in this Conference were chosen to include all important and active fields of mathematics, and thus the topics in this proceedings are rather diversified. Nevertheless, these manuscripts are useful references for further research undertakings in their respective fields.

On behalf of the organizers, we wish to express our thanks to all invited speakers for kindly accepting our invitation and all participants for enthusiastically responding to the Conference. We would like to give our respects and to express our gratitude to the late Professor Shingo Murakami. For without his concerted effort and sustained support, it would be impossible to organize this Conference. Finally, we sincerely thank the Taniguchi Foundation for providing generous support to hold

this Conference.

December, 2000  
Toshikazu Sunada,  
Masaki Maruyama,  
Editor

*All papers in this volume have been refereed and are in final form.  
No version of any of them will be submitted for publication elsewhere.*