数理解析研究所講究録 1605

Geometry related to the theory of integrable systems

可積分系に関わる幾何学の研究

京都大学数理解析研究所

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This is a report of research done at Research Institute for Mathematical Sciences, Kyoto University. The papers contained herein are in final form and will not be submitted for publication elsewhere.

Preface

The RIMS workshop entitled "Geometry related to the theory of integrable systems" was held at RIMS Kyoto University from September 25 to September 28 2007 with the assistance of Osaka City University Advanced Mathematical Institute, followed by a "Part II" workshop at Nara-gaku Seminar House.

This volume consists mainly of survey articles of the talks given in "Part I" at RIMS. In these articles the key aspects of various important results are described, leading the reader back to the relevant original papers where necessary. The topics cover a rather wide class of subjects in geometry related to integrable systems: the geometry of character varieties, quantum cohomology theory, quantum Painlevé equations, non-commutative integrable systems, affine Kac-Moody algebras, Einstein homogeneous manifolds, and surface theory. Two speakers have already published their results in other publications; the references are as follows:

K. Iwasaki and T. Uehara: *Geometry of Painlevé equations*, RIMS Kokyuroku Bessatsu B2 (2007), 73–88, and Math. Ann. 338 (2007), 295–345.

M. Micallef and J. Gray : *The work of Jesse Douglas on Minimal Surfaces*, Bulletin of the American Mathematical Society, 45 (2008), 293–302.

We have organized several international conferences on similar themes, starting with the MSJ-IRI (Mathematical Society of Japan International Research Institute) "Integrable Systems in Differential Geometry" held at the University of Tokyo in 2000. It is our pleasure to promote research in this area and encourage the participation of many young mathematicians, and we intend to continue this direction in the future.

I would like to express my sincere gratitude to all the speakers and the participants for their contributions in making the workshop successful.

June 6, 2008
Reiko Miyaoka

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