Preface

This volume is the proceedings of the conference “Mathematical structures of integrable systems and their applications” held at Research Institute for Mathematical Sciences, Kyoto University in Japan from September 5 to September 7, 2018. Speakers of the conference contributed their research papers or survey articles for this volume.

The aim of the conference was to connect researchers working on classical/quantum integrable systems with professions who work on various mathematical objects such as algebraic geometry, number theory, probability theory, etc. I hope the conference was successful and would like to express my gratitude to everyone who contributed his/her efforts. I also appreciate the help of anonymous referees.

January, 2020

Shinsuke Iwao
Program
Mathematical structures of integrable systems and their applications, 2018
RIMS 共同研究（公開型）2018
「可積分系理論から見える数理構造とその応用」

September 5, Wed

- 13:00–13:40 岩尾 慎介
  超離散 KP 方程式を用いた Young 領の組み合わせ論の証明
- 13:50–14:40 増田 哲
  $D_{1}^{(1)}$型 q-箇野系とその有理解
- 14:50–15:40 野邊 厚
  Chaos in cluster algebras
- 15:50–16:40 井上 玲
  Cluster realization of Coxeter groups and its application

September 6, Thu

- 9:30–10:20 龍 真語
  K3 surfaces and log rational surfaces
- 10:30–11:20 上原 崇人
  K3 曲面の構成と力学系への応用
- 11:30–12:30 松谷 茂樹
  超極円 σ 関数による戸田格子の周期解と擬周期解について
- 13:40–14:30 中村 あかね
  Geometric aspects of Generalized Hitchin systems
- 14:50–15:40 佐々田 構子
  ランダムな初期状態をもつ無限粒子箱玉系と Pitman の定理
- 15:50–16:40 大西 良博
  Weierstrass の sigma 函数に関する熱方程式論の高い種数の場合への拡張について (J. C. Eilbeck 氏, J. Gibbons 氏, S. Yasuda 氏との共同研究)
  On a generalization of the theory of heat equations for the Weierstrass sigma function to higher genus case (joint work with J. C. Eilbeck, J. Gibbons, and S. Yasuda)

September 7, Fri

- 10:00–10:50 神吉 雅崇
  離散可積分性判定と互いに素条件
- 11:00–11:50 長井 秀友
  超離散 2 次元戸田方程式とヤコビ恒等式
- 13:00–13:50 坂井 秀隆
  CFT approach to the q-Painlevé equations (Joint work with M. Jimbo and H. Nagoya)
- 14:00–14:50 鈴木 創雄
  クラスター代数と高階 q-パンルヴェ系
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Takao Suzuki and Naoto Okubo, Cluster algebra and $q$-Painlevé equations: higher order generalization and degeneration structure  

J. Chris Eilbeck and Yoshihiro Ônishi, Recursion Relations on the Power Series Expansion of the Universal Weierstrass Sigma Function  

Atsushi Nobe and Junta Matsukidaira, A family of integrable and non-integrable difference equations arising from cluster algebras  


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Hidetomo Nagai, An Ultradiscrete Permanent Solution to the Ultradiscrete Two-Dimensional Toda Equation  

Takayuki Koike and Takato Uehara, On an expression of neighborhoods around elliptic curves  

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David A. Croydon, Makiko Sasada, and Satoshi Tsujimoto, Dynamics of the ultra-discrete Toda lattice via Pitman’s transformation