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繰りこみ群の数理科学での応用

京都大学数理解析研究所

2012年8月

RIMS Kôkyûroku 1805

*Applications of the Renormalization Group Methods
in Mathematical Sciences*

September 12 ~14, 2011

edited by Keiichi R. Ito

August, 2012

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

This is a report of research done at the 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 symposium on applications of renormalization group methods in mathematical sciences was held at the Research Institute for Mathematical Sciences (RIMS) of Kyoto University from September 12, 2011 through September 14, 2011. This symposium was intended to discuss recent progress and problems in mathematical physics where the renormalization group methods are used practically and/or conceptually.

Although it was hot and humid in Kyoto while the symposium, we enjoyed more than 16 talks and 40 participants who were very keen to join the discussions. With the generous support from JSPS and RIMS, we were able to invite several distinguished national and international researcher's. Although the range of talks were very wide and some of them may not be directly related to the renormalization group methods, these lectures were of great interest to the participants and therefore the articles of this issue are expected to help the reader to discover interesting problems in mathematical sciences and/or find ideas to solve his/her problem(s). It is slightly unfortunate that some speakers were not able to contribute their manuscripts to this issue.

We would like to thank not only speakers but also all participants who joined the exciting discussions in the symposium. Finally we would like to express our sincere gratitude to RIMS for generous and financial support. This symposium was supported in part by the JSPS Grant-in-Aid for Scientific Research (B), No.20340032 (Grant holder: Prof.F.Hiroshima), in part by the JSPS Grant-in Aid for Scientific Research (C) No.20540221 (Grant holder: Prof.K.R.Ito), in part by the JSPS Grant-in Aid for Scientific for young scientists (B) No.21740059 (Grant holder: Prof.A.Sakai).

September 2011, Kyoto/Osaka

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Applications of the Renormalization Group Methods in Mathematical Sciences

Symposium

We invite you to the following symposium which is organized as one of the joint ventures of the Research Institute for Mathematical Sciences of Kyoto University.

organizer Keiichi R. Ito
 (Faculty of Science and Tech., Setsunan Univ.)
co-organizer Akira Sakai
 (Faculty of Sciences, Hokkaido Univ.)

date and time: 2011 September 12 (Mon.) 13:00 ~ 14 (Wed.) 16:50
place room No.420, Res.Inst.Math.Sci., Kyoto Univ.
 Kitashirakawa, Sakyo-ku, Kyoto

Sept. 12 (Mon.)

13:00-13:50 Tomohiro Sasamoto(Chiba Univ.)
 A replica analysis of the 1D KPZ equation
14:00-14:50 Shuji Watanabe (Gunma Univ.)
 Temperature dependence of the solution of the BCS
 gap equation
15:00-15:50 Toshimitu Takaesu(Kyushu Univ.)
 Functiobal Integral rep. for a relativistic Schödinger
 operator coupled with Scalar Bose Field
16:00-16:50 Yoshifumi Ito (Tokushima)
 Angular Momentum and its Expectation value

Sept. 13 (Tue.)

10:00-10:50 C.Newman (Courant Inst. Math.Sci., NYU)
 Ground State of the Two-Dimensional Spin Glass
11:00-11:50 P.Contucci (Bologna)
 Stability of the Spin Glass Phase Under Perturbation

Sept. 13 (contd.)

- 13:00 -13:50 Keiichi R. Ito (Setsunan Univ.)
RG flow of 2D $O(N)$ spin model and absence of
phase transitions
- 14:00-14:50 Teiji Kunihiro (Kyoto)
Derivation of Relativistic Hydrodynamic Equations for
a viscous fluid based on the RG method
- 15:00-15:50 Fumio Hiroshima (Kyushu)
Spectrum of a scalar quantum field model
on a Lorentzian Manifold
- 16:00-16:50 Itaru Sasaki (Shinshu)
Enhanced Binding for the Semi-relativistic Nelson Model
- 18:00— welcome party (Japanese cuisine ?)

Sept. 14 (Wed)

- 10:00-10:50 R.Sun (NUS, Singapore)
Brownian Web in the Scaling Limit of Supercritical
Oriented Percolation in Dimension 1+1
- 11:00-11:50 C.Giardina (Modena)
Exactly Solvable Models of Heat Conduction
- 13:00-13:50 Federico Camia (VU Amsterdam)
Critical Ising Models and Measure Ensembles
- 14:00-14:50 Masanobu Takei (Osaka Elect-Comm. Univ.)
Yasunari Higuchi (Kobe)
Scaling relations for percolation in the
2D high temperature Ising model
- 15:00-15:50 Nobuo Yoshida (Kyoto)
Linear Stochastic Growth Models
- 16:00-16:50 T.B.A.
Open Problems in the Future (provisional)

© Home Page of the Seminar

<http://www.setsunan.ac.jp/mpg/confs/rims11/renom11j.html>

<http://www.kurims.kyoto-u.ac.jp/>

繰りこみ群の数理科学での応用
Applications of the Renormalization Group Methods in Mathematical Sciences
RIMS 研究集会報告集

2011年9月12日～9月14日
研究代表者 伊東 恵一 (Keiichi R. Ito)
副代表者 坂井 哲 (Akira Sakai)

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