数理解析研究所講究録1651

微分方程式の粘性解とその周辺

京都大学数理解析研究所 2009年5月

RIMS Kôkyûroku 1651

Viscosity Solutions of Differential Equations and Related Topics

May, 2009

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

This volume contains the proceedings of the lectures delivered at the conference, Viscosity Solutions of Differential Equations and Related Topics, held at the Research Institute for Mathematical Sciences, Kyoto University, during June 25–27, 2008. All the papers in this volume are concerned with recent developments in the theory of viscosity solutions and related topics in differential equations. The conference was possible by support from the Research Institute for Mathematical Sciences. Also, financial support from the Japan Society for the Promotion of Science through its Grant-in-Aid for Scientific Research was helpful for making the conference successful. We would like to thank the Research Institute for Mathematical Sciences and the Japan Society for the Promotion of Science for their support and all those who cooperated to publish this volume.

Hitoshi Ishii (Waseda University) Shigeaki Koike (Saitama University)

April, 17, 2009

微分方程式の粘性解とその周辺 Viscosity Solutions of Differential Equations and Related Topics RIMS 研究集会報告集

2008年6月25日~6月27日 研究代表者 石井 仁司 (Hitoshi Ishii) 副代表者 小池 茂昭 (Shigeaki Koike)

目 次

| 1. | Application of the Aubry-Mather theory to a system of Hamilton-Jacobi equations | | | | |
|-----|---|-----------------------------------|--|--|--|
| | with unilateral implicit obstacles | 1 | | | |
| | 福岡大・理(Fukuoka U.) | 山田 直記(Naoki Yamada) | | | |
| 2. | Maximum principle for fully nonlinear equations with linear and | | | | |
| | superlinear terms in Du | 10 | | | |
| | 埼玉大・理工学(Saitama U.) | 中川 和重(Kazushige Nakagawa) | | | |
| 3. | Stationary isothermic surfaces and some chara | cterizations of the hyperplane 23 | | | |
| | 広島大・工学(Hiroshima U.) | 坂口 茂(Shigeru Sakaguchi) | | | |
| 4. | . RATES OF CONVERGENCE FOR MONOTONE APPROXIMATIONS OF | | | | |
| | VISCOSITY SOLUTIONS OF FULLY NONLINEAR UNIFORMLY | | | | |
| | ELLIPTIC PDE | 31 | | | |
| | U. Chicago | Panagiotis E. Souganidis | | | |
| 5. | A NEW FREQUENCY FORMULA AND APPLICATIONS TO A SINGULAR | | | | |
| | PERTURBATION PROBLEM | 41 | | | |
| | 東大・数理科学(U. Tokyo) | ヴァイス ゲオグ(G. S. Weiss) | | | |
| 6. | Large-time behavior of solutions to Hamilton-Jacobi equations | | | | |
| | with time-dependent boundary data | 48 | | | |
| | 早大・基幹理工学(Waseda U.) | 三竹 大寿(Hiroyoshi Mitake) | | | |
| 7. | Glaeser's type estimates | 58 | | | |
| | Sapienza U. Roma | Italo Capuzzo Dolcetta | | | |
| 8. | Representation formula of viscosity solutions for parabolic equations | | | | |
| | via a deterministic two-person game | 70 | | | |
| | 北大・理学(Hokkaido U.) | 葛西 香太(Kota Kasai) | | | |
| 9. | Pyramidal traveling fronts in the Allen-Cahn of | equations 92 | | | |
| | 東工大・情報理工学(Tokyo Inst. Tech.) | 谷口 雅治(Masaharu Taniguchi) | | | |
| 10. | Denjoy-Schwartz and Hamilton-Jacobi | 110 | | | |
| | ENS Lyon | Albert Fathi | | | |

| 11. | Some results on quotient Aubry sets | | | 132 |
|-----|---|-------------|----------------------|-----|
| | 富山大・理工学(U. Toyama) | 藤田 | 安啓(Yasuhiro Fujita) | |
| 12. | Long-time behavior of solutions of Hamilton-Jacobi equations | | | |
| | with convex and coercive Hamiltonians | | | 137 |
| | 広島大・工学(Hiroshima U.) | 市原 | 直幸(Naoyuki Ichihara) | |
| 13. | NONLOCAL HAMILTON-JACOBI EQUA | ATIONS RELA | TED TO DISLOCATION | |
| | DYNAMICS AND A FITZHUGH-NAGUI | MO SYSTEM | | 161 |
| | U. Tours | Olivier | Ley | |
| 14. | Poisson equations derived from certain H-J-B equations of ergodic type1 | | | 179 |
| | 阪大・基礎工学(Osaka U.) | 長井 | 英生(Hideo Nagai) | |