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Kyoto University
Singularity theory, geometry and topology

November 29 ～ December 2, 2011

edited by Kentaro Saji

April, 2013

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

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Preface

The RIMS workshop “Singularity theory, geometry and topology” was held at the Research Institute for Mathematical Sciences of Kyoto University from November 29 to December 2, 2011, which I had the pleasure to organize.

The aim of the workshop was to give an overview of recent developments in the singularity theory of smooth maps and its applications to geometry and topology. There were 15 lectures during the workshop.

This volume of the RIMS Kôkyûroku Bessatsu is a collection of articles contributed by 9 speakers. In addition I invited two other participants to write papers as well. Although they did not give talks, they substantially contributed to the workshop via discussions, comments and crucial questions, and their papers increased the value of this volume. Each paper was refereed by an expert, and is published here in final form. I would like to express my sincere gratitude to all participants, speakers, RIMS secretaries and referees for their efforts, which made this meeting a success.

March, 2013

Kentaro Saji (Kobe University)
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Program of the workshop

Title Singularity theory, geometry and topology
Venue Room 111, Research Institute for Mathematical Sciences, Kyoto University
Dates November 29 - December 2, 2011

29, November
13:40–14:40 ̈̈̈ Masayuki Kawashima
On (2, p) quasi torus curves and weak Zariski pairs

14:50–15:50 ̈̈̈ Kosuke Naokawa
Singularities of the asymptotic completion of developable Möbius strips

16:00–17:00 ̈̈̈ Makoto Kimura
Ricci solitons on hyperspheres in space forms

30, November
10:00–11:00 ̈̈̈ Takashi Nishimura
Topological aspect of Wulff shapes

11:10–12:10 ̈̈̈ Atsufumi Honda
Extrinsically flat surfaces and the geometric structure on the space of geodesics in the 3-sphere

13:40–14:40 ̈̈̈ Isao Nakai
Topology of cubic maps of $C^3$ to $C^2$

14:50–15:50 ̈̈̈ Kazuto Takao
Singularities of product maps and Heegaard splittings

16:00–17:00 ̈̈̈ Daiki Sumida
A $C^\infty$ map into the torus induced by a pair of milnor fibrations

1, December
10:00–11:00 ̈̈̈ Shintaro Yoshizawa
Real analytic gradientflows and matrix eigenvalue problems
11:10–12:10 · · · Naoki Kitazawa
Numerical invariants we can define from singularities of generic fold maps

13:40–14:40 · · · Kaname Hashimoto
Cohomogeneity one special Lagrangian submanifolds in the complex sphere

14:50–15:50 · · · Masaru Hasegawa
Height functions on Whitney umbrella

16:00–17:00 · · · Yusuke Mizota
Multicusps

2, December
10:00–11:00 · · · Laurentiu Paunescu
The SPP-geometry

11:10–12:10 · · · Goo Ishikawa
Openings of stable unfoldings