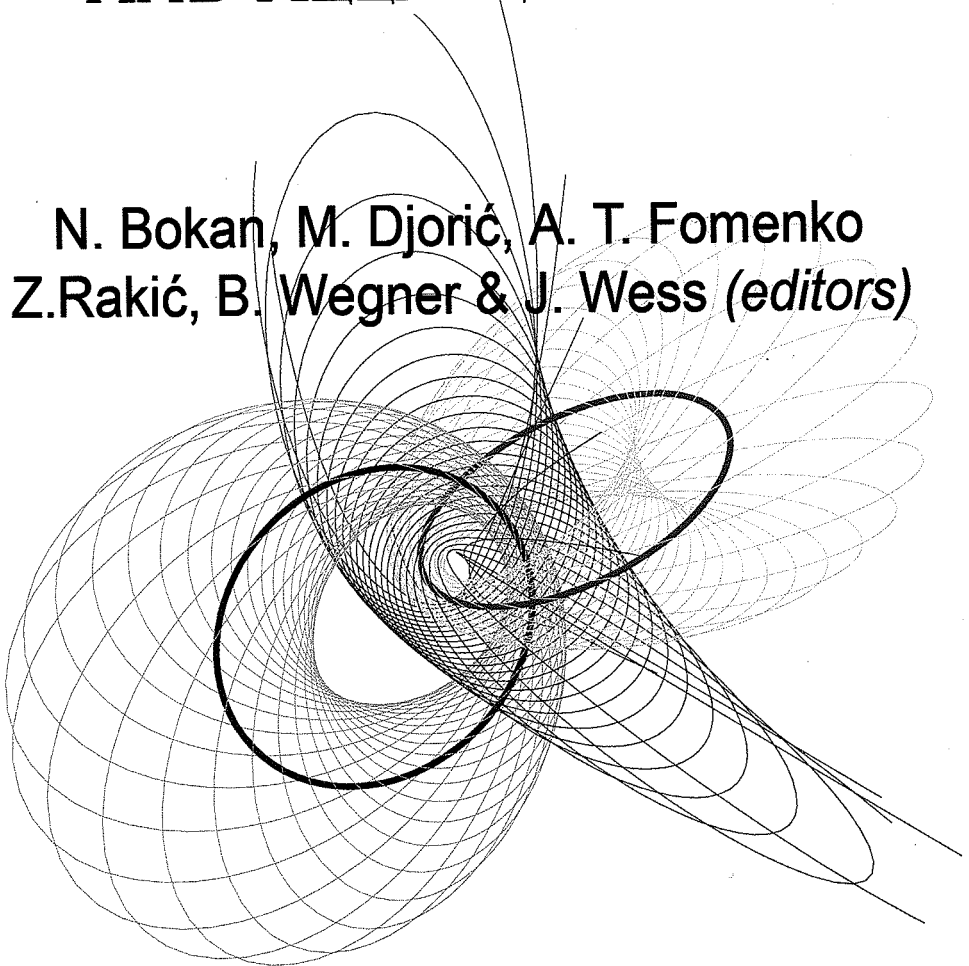


Proceedings of the Conference

CONTEMPORARY GEOMETRY AND RELATED TOPICS

N. Bokan, M. Djorić, A. T. Fomenko
Z. Rakić, B. Wegner & J. Wess (*editors*)



Proceedings of the Conference
**CONTEMPORARY GEOMETRY
AND RELATED TOPICS**

Belgrade, Serbia & Montenegro

June 26 – July 2, 2005

Editors

Neda Bokan

University of Belgrade, Serbia

Zoran Rakić

University of Belgrade, Serbia

Mirjana Djorić

University of Belgrade, Serbia

Bernd Wegner

Technical University, Berlin, Germany

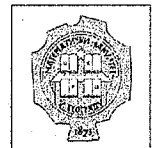
Anatoly T. Fomenko

Moscow State University, Russia

Julius Wess

University of Munich, Germany

Faculty of Mathematics, University of Belgrade



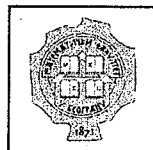
Published by

Faculty of Mathematics, University of Belgrade

Studentski trg 16

11 001 Belgrade

Serbia



Advisory Board

dr Zoran Kadelburg, President

dr Gojko Kalajdžić

dr Smilja Milanović-Lazarević

dr Trajko Angelov

dr Gordana Pavlović-Lažetić

Technical editors: Zoran Stanić and Zoran Rakić

Serbian Ministry of Science and Environmental Protection supported the publication of this volume.

CONTEMPORARY GEOMETRY AND RELATED TOPICS

Copyright © 2006 Faculty of Mathematics, University of Belgrade

All rights reserved. This book, or parts thereof, may not be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording or any information storage and retrieval system now known or to be invented, without written permission from the Publisher.

ISBN 86 – 7589 – 059 – 1

Printed in Serbia by *Čigoja Publishing Company*

Number of copies 250.

Preface

The *Conference Contemporary Geometry and Related Topics*, which took place in Belgrade from June 26th to July 2nd, 2005, was organized by the Faculty of Mathematics of the Belgrade University and the Mathematical Institute of SANU (Serbian Academy of Sciences and Arts).

There were more than 80 participants from 21 countries: Argentina, Australia, Belarus, Brazil, Canada, Czech Republic, Hungary, France, Germany, Italy, Japan, Kuwait, FYR Macedonia, Romania, Russia, Slovenia, Spain, Turkey, UK, USA and Serbia & Montenegro. Scientific activities featured plenary lectures of 45 minutes, invited lectures of 30 minutes and short communications of 15 minutes, organized in two sections.

We would like to use this opportunity to express our gratitude to all of those who have contributed to the success of the Conference and this Proceedings. First of all, we feel deep appreciation for all the participants, whose style of communications with the organizers and quality of lectures have motivated us to implement our plan with pleasure. We also thank to all colleagues who offered us their manuscript for publication. All articles included in this Proceedings passed the usual referring process. We thank all referees who played a significant role by reading the manuscripts carefully and making very precise and useful comments, that have contributed to the improvement of the final version of all papers.

We would like to thank all institutions who helped the organization of this Conference.

The cover page is based on the logo of the Conference. The logo is made by software *Visualization of the Hopf Bundle and the Dirac Connection* written by dr S. Vukmirović (available at www.mathsource.com, Mathsource 5193). We are indebted to our colleagues mr M. Antić, mr Z. Stanić and dr S. Vukmirović, members of the Organizing Committee.

The Editors

List of sponsors

Ministry of Science and Environmental Protection of Republic of Serbia

Ministry of Education and Sport of Republic of Serbia

Montavia, Belgrade

Beogradska berza, Belgrade

CET, Belgrade

Microsoft, Belgrade

Studio Plus, Belgrade

LHB Bank, Smederavo

Univerzal Banka, Belgrade

Total design, Belgrade

Faculty of Mathematics, Belgrade

Mathematical Institute of SANU, Belgrade

Foundation Hemofarm, Vršac

*Project MM1646, Geometry, Education and Visualization with Applications,
of MSEP*

Contents

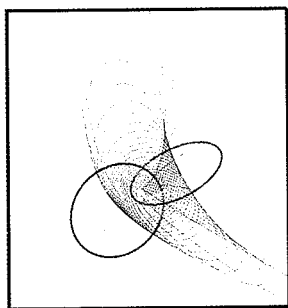
<i>Vitaly V. Balaschenko</i> Invariant f -structures in generalized Hermitian geometry	5
<i>Cornelia L. Bejan and Massimiliano Ferrara</i> Para-Kähler manifolds of quasi-constant p -sectional curvature	29
<i>David E. Blair</i> On generalized catenoids	37
<i>Manlio Bordoni</i> Spectra of submersions	51
<i>Miguel Brozos-Vázquez, Peter Gilkey and Stana Nikčević</i> Jacobi-Tsankov manifolds which are not 2-step nilpotent	63
<i>Esther Cabezas-Rivas and Vicente Miquel</i> Mean Curvature in Minkowski Spaces	81
<i>Nicola Ciccoli and Fabio Gavarini</i> Quantum duality principle for coisotropic subgroups and Poisson quotients	99
<i>Irena Čomić</i> The Einstein-Yang-Mills equations in gauge spaces of order k	119
<i>Ivko Dimitrić</i> Grassmannians via projection operators and some of their special submanifolds	135
<i>Mirjana Djorić and Masafumi Okumura</i> Certain contact submanifolds of complex space forms	157
<i>Kosta Došen and Zoran Petrić</i> Symmetric self-adjunctions: A justification of Brauer's representation of Brauer's algebras	177
<i>Branko Dragovich and Zoran Rakić</i> Some aspects of noncommutativity on real, p -adic and adelic spaces	189

<i>Maria J. Druetta</i>	
The k -stein condition on Damek–Ricci spaces	205
<i>Alexandra V. Fedorova</i>	
Bifurcational diagram and discriminant of completely integrable system	217
<i>Marisa Fernández and Vicente Muñoz</i>	
Non-formal compact manifolds with small Betti numbers	231
<i>Vasyl Gorkavyy</i>	
On minimal lightlike surfaces in Minkowski space	247
<i>Graham Hall</i>	
Curvature structure and general relativity	261
<i>Friedrich Hegenbarth and Dušan Repovš</i>	
Some recent approaches in 4-dimensional surgery theory	273
<i>Slavik Jablan and Radmila Sazdanović</i>	
Braid family representatives	285
<i>Eberhard Malkowsky</i>	
The graphical representation of neighbourhoods in certain topologies	305
<i>Stefano Marchiafava</i>	
Complex submanifolds of quaternionic Kähler manifolds	325
<i>Darko Milinković and Jelena Katić</i>	
On Hofer's geometry of the space of Lagrangian submanifolds	337
<i>Dmitry Millionschikov</i>	
Massey products in graded Lie algebra cohomology	353
<i>Yuri Nikolayevsky</i>	
On Osserman manifolds of dimension 16	379
<i>Gleb V. Nosovskiy and Eugenia S. Skripka</i>	
Error estimation for the direct algorithm of projective mapping calculation in multiple view geometry	399
<i>Taras Panov</i>	
Topology of Kempf–Ness sets for algebraic torus actions	409

<i>Zoran Petrović</i> Nonsingular bilinear maps, spaces of matrices, immersions and embeddings	427
<i>Ljiljana Radović and Slavik Jablan</i> Mackay antisymmetry space groups	437
<i>Alessandro Savo</i> Spectral estimates for differential forms	451
<i>Mohsen Shihha and Josef Mikeš</i> On holomorphically projective flat parabolically-Kählerian spaces	467
<i>Zoran Stanić and Slobodan K. Simić</i> On graphs with unicyclic star complement for 1 as the second largest eigenvalue	475
<i>Lajos Tamássy</i> Finsler spaces corresponding to distance spaces	485
<i>Kostadin Trenčevski</i> Violation of the strong equivalence principle	497
<i>Aysel Turgut Vanlı</i> Corrected energy of distributions for 3-Sasakian and normal complex contact manifolds, and a critical point of the energy on the Iwasawa manifold	513
<i>Vesna Veličković</i> On surfaces of rotation of a given constant Gaussian curvature and their visualizations	523

Proceedings of the Conference

CONTEMPORARY GEOMETRY AND RELATED TOPICS



This volume covers a broad range of topics in modern geometry and related branches of mathematics, physics and visualization. Most of papers give new interesting results in Riemannian and pseudo-Riemannian geometry, various structures on differentiable manifolds, homogenous spaces, submanifolds, Lie algebra cohomology, topology, integrable systems, general relativity, Finsler geometry, geometric invariant theory, links and knots, and noncommutative geometry. There are also papers giving overviews of the recent achievements in some special topics such as Kähler geometry, Minkowski spaces, spectral geometry, quantum groups and Hofer's geometry. This book provides a great chance for interchanging new results and ideas in multidisciplinary studies.



Faculty of Mathematics
University of Belgrade
www.matf.bg.ac.yu

ISBN 86-7589-059-1



9 7 8 8 6 7 5 8 9 0 5 9 1