

4th International Scientific Conference on Geometry and Graphics
moNGeometrija 2014

PROCEEDINGS VOLUME 2



June 20th - 22nd 2014
Vlasina, Serbia

ISBN 978-86-88601-14-6

4th international scientific conference
moNGeometrija 2014

Publisher:

Faculty of Civil engineering and Architecture in Niš
Serbian Society for Geometry and Graphics SUGIG

Title of Publication

PROCEEDINGS - Volume 2:

- Theoretical geometry, exposed by synthetical or analytical methodology
- Geometry applied in Visual Arts and Design
- Education and didactics

Editor-in-Chief

Sonja Krsić, PhD

Co-Editor

Petar Pejić

Text formating

Petar Pejić

ISBN 978-86-88601-14-6

Number of copies printed 50

Printing: Galaksija Niš

4th International Scientific Conference on Geometry and Graphics
moNGeometrija 2014

Is organized by:

University of Niš, Faculty of Civil Engineering and Architecture

Serbian Society for Geometry and Graphics

University of Niš, Faculty of Mechanical Engineering

University of Niš, Faculty of Occupational Safety

College of Applied Technical Sciences Niš

Under patronage of the

GOVERNMENT OF THE REPUBLIC OF SERBIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGICAL

DEVELOPMENT

And supported by:

Građevinsko privredno društvo Banković



Građevinsko privredno društvo
Banković

www.bankovic.rs
office@bankovic.rs



Verujemo u nešto starije od nas, u tradiciju i predanje.
Svesni smo da od kada postoje ljudi, postoji i njihova potreba prvo za traženjem, a onda i izgradnjom skloništa. Tradicija graditeljstva stara je skoro koliko i ljudski rod.



Scientific committee

Hellmuth Stachel, PhD,	Austria
Branko Kolarevic, PhD,	Canada
Milena Stavrić, PhD,	Austria
Naomi Ando, PhD,	Japan
Chitose Tanaka, PhD,	Japan
Daniel Lordick, PhD,	Germany
Laszlo Voros, PhD,	Hungary
Emil Molnar, PhD,	Hungary
Viktor Milejkovskyi, PhD,	Ukraine
Svetlana Shambina, PhD,	Russia
Alina Duta, PhD,	Romania
Jelisava Kalezić, PhD,	Montenegro
Risto Tashevski, PhD,	Macedonia
Sonja Krasić, PhD,	Serbia
Biserka Markovic, PhD,	Serbia
Ljubica Velimirović, PhD,	Serbia
Ljiljana Radović, PhD,	Serbia
Ivan Mijailović, PhD,	Serbia
Nada Stojanović, PhD,	Serbia
Branislav Popkonstantinović, PhD,	Serbia
Marija Obradović, PhD,	Serbia
Aleksandar Čučaković, PhD,	Serbia
Ratko Obradović, PhD,	Serbia
Radovan Štulić, PhD,	Serbia
Miodrag Nestorović, PhD,	Serbia
Ivana Marcikić, PhD,	Serbia
Đorđe Zloković, PhD,	Serbia
Hranislav Anđelković, PhD,	Serbia
Miroslav Marković, PhD,	Serbia
Lazar Dovniković, PhD,	Serbia

Organization committee

Sonja Krasić, PhD
Biserka Marković, PhD
Ljiljana Radović, PhD
Ljubica Velimirović, PhD
Ivan Mijailović, PhD
Nada Stojanović, PhD
Vladan Nikolić
Petar Pejić
Hristina Krstić
Nenad Jovanović
Bojana Anđelković

Disclaimer

The contents of the papers presented in this publication are the sole responsibility of their authors and can in no way be taken to reflect the views of the Organizer.

CONTENTS

FOREWORD	11
THEORETICAL GEOMETRY, EXPOSED BY SYNTHETICAL OR ANALYTICAL METHODOLOGY	12
Sonja Gorjanc, Ema Jurkin VISUALIZATION OF GENERALIZED ROSE SURFACES	13
László Vörös SPACE-FILLING MOSAICS OF 3D MODELS OF 3-13D CUBES RELATED TO REGULAR AND SEMI-REGULAR POLYHEDRA.....	22
Olena Gumen, Viktor Mileikovskiy THE GEOMETRICAL APPROACH TO CALCULATE MOMENTUM CORRECTION FOR NON-QUASI-STEADY FLOWS WITH AVERAGING POSSIBILITY	32
Alina Duta, Dragos - Laurentiu Popa, Ludmila Sass, Gelica Stanescu ABOUT DRAWING IMAGES IN SPHERICAL MIRRORS.....	42
Maja Petrović, Branko Malešević, Bojan Banjac, Ratko Obradović GEOMETRY OF SOME TAXICAB CURVES.....	53
Branko Malešević, Maja Petrović, Bojan Banjac, Ivana Jovović, Petar Jovanović A METHOD FOR EXTRACTION OF ARCS OF THE ALGEBRAIC CURVES	65
Attila Bölcskei BEYOND THE CONE OF VISION - NONLINEAR PROJECTIONS AND REFLECTIONS	77
Sonja Krsaić, Petar Pejić, Nenad Jovanović ANALYSIS OF MAPPING OF RULED 2 nd DEGREE SURFACES BY ABSOLUTE CONIC IN GENERAL COLLINEAR SPACES.....	87
Zorana Jeli, Branislav Popkonstantinovic, Goran Lazovic, Rasa Andrejevic ANAGLYPH REPRESENTATION IN TECHNICAL SYSTEMS DEVELOPMENT .	98

Dimitrije Nikolić, Ivica Bošnjak, Radovan Štulić A NOTE ON A PROPERTIES OF HYPEROSCULATING CIRCLE OF PARABOLA AND ITS GENERALIZATION	112
Dimitrije Nikolić, Radovan Štulić SPATIAL INTERPRETATION OF KAPPA CURVE AS THE PROJECTION OF CLOSED OBLIQUE HELICOID'S CONTOUR	118
Dimitrije Nikolić, Radovan Štulić SPATIAL INTERPRETATION OF GENERALIZED KAPPA CURVE AS THE PROJECTION OF OPEN OBLIQUE HELICOID'S CONTOUR LINE.....	126
Dimitrije Nikolić, Radovan Štulić ENDPOINTS OF OBLIQUE HELICOID'S CONTOUR LINE AND ITS INFLUENCE ON THE CONSTRUCTION OF GENERALIZED KAPPA CURVE.....	138
Slobodan Mišić, Marija Obradović, Branislav Popkonstantinović THE STRUCTURAL TRANSFORMATION OF CONCAVE CUPOLAE OF FOURTH SORT USING DIFFERENT VARIANTS OF CONSTRUCTIVE PROCEDURE ...	147
Marija Obradović, Slobodan Mišić, Branislav Popkonstantinović CONCAVE PYRAMIDS OF SECOND SORT - THE OCCURRENCE, TYPES, VARIATIONS.....	157
Aca Ranđelović, Olgica Lazarević DETERMINING THE PROBABILITY OF HITTING AREA TARGETS WHEN FIRING AN INDIVIDUAL MISSILE.....	169
Gordana Djukanovic, Djordje Djordjevic, Dusan Filipovic, Milorad Janic MAPPING OF THE PENCILS OF CONICS USING SUPERSYMMETRY - INVERSION OF HARMONIC HOMOLOGY	180
Milica D. Cvetković, Ljubica S. Velimirović, Nikola M. Velimirović SHAPE OF SURFACES ANALYSIS.....	194
Olga Kravchuk, Petro Tadeyev TO THE PROBLEM OF INVARIANT NORMALIZATIONS OF VECTOR FIELD IN N-DIMENSIONAL AFFINE SPACE	204
Emil Molnár „FROM NOTHING I HAVE CREATED A NEW DIFFERENT WORLD“ (JÁNOS BOLYAI 1823)	212

Emil Molnár, János Katona, István Prok, Jenő Szirmai THE REGULAR 120-CELL IN 4-SPACE AND ITS VISUALIZATION	214
GEOMETRY APPLIED IN VISUAL ARTS AND DESIGN	216
Ludmila Sass, Alina Duta, Anca Mihaela Mogosanu APPLICATIONS OF GEOMETRICAL DRAWING IN THE POPULAR ART FROM OLTENIA - ROMANIA	217
Ksenija Hiel, Ivana Blagojević CONNOTATION OF COLOURS IN LANDSCAPE DESIGN	227
Radovic M. Ljiljana, Slavik V. Jablan KNOTS IN MODERN SCULPTURE AND ARCHITECTURE	237
Dirk Huylebrouck 500 YEARS OF MELANCHOLIA.....	247
Marijana Paunović OPTICAL ANAMORPHOSES CONSTRUCTED BY THE MEANS OF ORTHOGONAL GRIDS	257
Milica Igić, Željko Blagojević OPTICAL ILLUSIONS IN ARCHITECTURE AND URBAN PLANNING.....	269
Igor Bjelić, Sonja Krasić, Petar Pejić THE REVERSE PERSPECTIVE IN IMAGES OF ENDOWMENT MODELS OF SERBIAN RELIGIOUS BUILDINGS IN THE BYZANTINE FRESKOS	279
Ivana Marcikić THE SPACE IN PAINTING “LAS MENINAS” BY VELÀZQUEZ.....	290

EDUCATION AND DIDACTICS.....	300
Nataša Teofilović, Aleksandar Čučaković, Biljana Jović 3D ANIMATION APPLICATIONS IN DESCRIPTIVE GEOMETRY TEACHING.	301
Zorana Jeli, Emil Veg, Branislav Popkonstantinovic, Ljubomir Miladinovic ANALYSYS OF EDUCATIONAL PROCESS IN SUBJECT CONSTRUCTIVE GEOMETRY AND GRAPHICS AT THE FACULTY OF MECHANICAL ENGINEERING.....	311
Olga Timčenko, Radoslav Stojić, Katarina Jevtić-Novaković COMPARISON OF EXPERIENCES IN TEACHING 3D MODELLING AND RENDERING	319
Ratko Obradović, Jelena Aleksić, Miloš Vujanović, Bojan Banjac, Igor Kekeljević, Miroslav Dimitrijević, Branko Malešević DOMINANT PRE-EXAM OBLIGATIONS AS A BASIS FOR SUCCESSFUL STUDENTS WORK.....	337
Ninoslav Ćirić EFFECTS OF CAD (COMPUTER-AIDED DESIGN) PROGRAMS ON THE PERCEPTION OF SPACE WITHIN ARCHITECTURE STUDENTS	348
Jelena Janev, Ana Perišić, Marko Lazić OPTIMISATION OF REAL LIFE MODELS USING BASIC GEOMETRICAL SHAPES IN FREEHAND DRAWING COURSE IN ENGINEERING ANIMATION STUDIES	358
Maja Glavaš-Trbić CIVIL ENGINEERING SCHOOL PORTFOLIO: DESCRIPTIVE GEOMETRY ...	368