Contents

Invited talks

Juan G. Alcázar
Symmetries of canal surfaces and Dupin cyclides 11

Ema Jurkin
On some properties of cyclic quadrangles in isotropic plane 12

Michael Kerber
The Persistent Homology Pipeline: Shapes, Computations, and Applications 14

Marjeta Krajnc
Dual approach to rational curves with Pythagorean properties 15

Maria Lucia Sampoli
Pythagorean-hodograph curves and their application to Geometric Modelling 16

István Talata
Kissing Numbers of Translative Packings of Convex Bodies 17

Contributions

Bernd Simeon, **Clarissa Arioli**
On the relation of scaled boundary IGA and classical Galerkin IGA . 21

Michal Bizzarri, Miroslav Lávička, Zbyněk Šír, Jan Vršek
Hermite interpolation by polynomial PN surfaces 23

Francisco Botana, Tomas Recio
A protocol for the exact computation of envelopes of families of plane curves 25

Karl-Heinz Brakhage, Ansgar Strzelczyk
Analytical investigations on fast approximation methods for fitting with surfaces or folding structures 27

Alfonso Carriazo, Emilio Carrizosa, M. Carmen Márquez
Free approximations of regular curves and surfaces 29

Carlos D'Andrea
The use of higher order syzygies in the implicitization of rational parametrizations 30

Zlatko Erjavec
Isometry between two models of $\widetilde{SL(2,\mathbb{R})}$ geometry 31

Karla Ferjančič, Marjeta Krajnc, Vito Vitrih
On C^2 rational motions of degree six 33

Jorge Caravantes, Gema M. Diaz-Toca, **Mario Fioravanti**, Laureano Gonzalez-Vega, Ioana Necula
Computing the topology of an arrangement of real algebraic plane curves presented parametrically or implicitly and including offsets ... 34

Rida T. Farouki, Graziano Gentili, **Carlotta Giannelli**, Alessandra Sestini, Caterina Stoppato
On the characterization of polynomial curves with rational rotation-minimizing frames 36

Michael Haberleitner, Bert Jüttler
Isogeometric Segmentation 37

Jochen Hinz, Matthias Möller, Cornelis Vuik
The Multigrid Algorithm For Planar Parameterization In Isogeometric Analysis 38

Carlotta Giannelli, **Tadej Kanduč**, Francesca Pelosi, Hendrik Speleers
Hierarchical box splines in numerical simulation 39

Mirela Katić Žlepalo
Curves of Vertices of Conic Pencils in Pseudo-Euclidean Plane 40

Zoltán Kovács, Tomás Recio, M. Pilar Vélez
Reasoning about linkages with dynamic geometry 41

Rimvydas Krasauskas, Severinas Zube
Rational offsets of regular quadrics revisited 43

Kinga Kruppa, Roland Kunkli, Miklós Hoffmann
An extension to circle and sphere skinning algorithms 45

Niels Lubbes
Hexagonal webs of circles 46

Adam Hlaváč, **Michal Marvan**
On constant astigmatism surfaces and spherical orthogonal equiareal patterns 48

Bohumír Bastl, **Kristýna Michálková**
Dynamic B-spline surface and volumetric models of selected water turbines 50

Dominik Mokriš
Import and triangulate splines efficiently by the example of IGES and STEP files 52

Emil Molnár, Jenő Szirmai
Visualization of hyperbolic cobweb manifolds 53

Stephen Edward Moore
Discontinuous Galerkin Isogeometric Analysis for the Biharmonic Equation 54

Carlotta Giannelli, **Duccio Mugnaini**, Alessandra Sestini
Trajectory planning with smooth feedrate based on PH quintic splines 55

Christian Müller
From Architecture to Differential Geometry—Discrete Isothermic Nets 56

Klara Mundilova
Interactive Design of Developable Surfaces with Curved Creases 57

Ferenc Nagy, Roland Kunkli, Miklós Hoffmann
New algorithms to find isoptic surfaces for three-dimensional objects 58

Georg Nawratil
On the set of oriented line-elements: point-models, metrics and applications 59

Mason Pember, Wayne Rossman, Kentaro Saji, Keisuke Teramoto
Singularities and Lie sphere transformations 61

Miguel Brozos-Vázquez, **María-José Pereira-Sáez**,
María José Souto-Salorio, Ana D. Tarrío-Tobar
Collision detection between a sphere and another quadric 63

Jan Pospíšil, Vladimír Švígler
Isogeometric analysis for partial integro-differential equations arising in option pricing 65

Dennis I. Barrett, **Claudiu Remsing**
Nonholonomic Riemannian Structures on Lie Groups 66

Otto Röschel
Curved Folding with Pairs of Cones 67

Daniel F. Scharler
Straight Lines in the Extended Kinematic Image Space 69

Niels Lubbes, **Josef Schicho**
Linear Sections of the Study Quadric 71

Hans-Peter Schröcker
Uniqueness of Minimal Motions 73

Marija Šimić Horvath, Vladimir Volenec, Jelena Beban-Brkić
Parabolas of cyclic quadrangle in isotropic plane 74

Eva Blažková, **Zbyněk Šír**
Multivalued support function at inflection points of planar curves ... 76

Hellmuth Stachel
Reflection in Quadrics 77

Annabelle Collin, Mario Kapl, Giancarlo Sangalli, **Thomas Takacs**
Analysis-suitable G^1 multi-patch domains in IGA 78

Kai Kellner, **Thorsten Theobald**
Sum of Squares Certificates for Containment of H-polytopes in V-polytopes 79

Robert Tornai
Design of a Massively Parallelized Image Processing System 80

Ákos Tóth, Roland Kunkli
An efficient cage generation algorithm for 3D triangulated meshes ... 82

Daniela Velichová
Minkowski operations on free-form curves ... 84

Vito Vitrih, Mario Kapl
Space of C^2-smooth geometrically continuous isogeometric functions on planar multi-patch geometries ... 86

Krassimira Vlachkova
Comparing tensor product Bézier surfaces for coincidence ... 88

Jan Vršek
Contour curves and isophotes on rational ruled surfaces ... 89

Norimasa Yoshida, Takafumi Saito
Arc Length Parameterization Curves based on Explicit Polynomial B-splines ... 90

Aleš Vavpetič, **Emil Žagar**
General Framework for Approximation of Circular Arcs by G^k Parametric Polynomial Interpolants ... 92

List of participants ... 93