

Carlotta Giannelli

Dip. di Matematica e Informatica "U. Dini"
Università degli Studi di Firenze
Viale Morgagni 67/A
50134 Firenze, Italy

tel.: +39 055 2751407
e-mail: carlotta.giannelli@unifi.it
homepage: www.dsi.unifi.it/~giannell
RID: www.researcherid.com/rid/G-2093-2014

CURRICULUM VITAE

Personal details

Place and date of birth Florence, Italy – November 13, 1980
Citizenship Italian

Current Position

Mar., 2014 – Mar., 2017 Principal Investigator of the Project
Design of Reliable, Exact, and Application-oriented techniques for geometric Modeling and numerical Simulation (DREAMS)
Programma "Futuro in Ricerca"(FIR) 2013 (MIUR, ITALY)

Oct., 2015 – Assistant Professor
Dipartimento di Matematica e Informatica "U. Dini"
Università degli Studi di Firenze, ITALY

Dec., 2013 National Scientific Habilitation in Numerical Analysis to access the rank of Associate Professor, Ministry of Education, Universities and Research (MIUR, ITALY).

Education

April 21, 2010 Ph.D., Computer Science and Applications
University of Florence, ITALY

July 7, 2006 Laurea in Computer Science
University of Florence, ITALY
Final mark: 110/110 cum laude

July 20, 1999 Secondary school diploma in scientific studies
Final mark: 100/100

Experience

- Jun., 2014 – Set., 2015* Senior researcher
Istituto Nazionale di Alta Matematica “F. Severi” c/o
Dipartimento di Matematica e Informatica “U. Dini”
Università degli Studi di Firenze, ITALY
- Mar. 2014 – Giu., 2014* Postdoctoral fellow
Istituto Nazionale di Alta Matematica “F. Severi” c/o
Dipartimento di Matematica e Informatica “U. Dini”
Università degli Studi di Firenze, ITALY
- Nov., 2013 – Feb., 2014* Visiting
Istituto di Matematica Applicata e Tecnologie Informatiche
“Enrico Magenes” (IMATI)
Consiglio Nazionale delle Ricerche (CNR), Pavia, ITALY
- Apr., 2013 – Sept., 2013* Postdoctoral Marie Curie fellow
Industry-Academia Partnerships and Pathways (IAPP)
Marie Curie Actions (People, FP7)
Participants: MTU Aero Engines AG, Munich, GERMANY,¹
Johannes Kepler Universität Linz, AUSTRIA.
- Apr., 2011 – Mar., 2013* Postdoctoral Marie Curie fellow (individual project)
Intra-European Fellowships for career development (IEF)
Marie Curie Actions (People, FP7)
Institute of Applied Geometry
Johannes Kepler University Linz, AUSTRIA
- Jan., 2011 – Mar., 2011* Postdoctoral research assistant
Institute of Applied Geometry
Johannes Kepler University Linz, AUSTRIA
- Oct., 2010 – Dec., 2010* Postdoctoral Marie Curie fellow
Marie Curie Actions (People, FP7)
Initial Training Networks (ITN)
Institute of Applied Geometry
Johannes Kepler University Linz, AUSTRIA
- Jan., 2010 – Apr., 2010* Postdoctoral research assistant (invited position)
Laboratoire Jean-Kuntzmann – CAGD team
Université Joseph Fourier, Grenoble, FRANCE
- Nov., 2007 – Jan., 2008* Visiting Scholar (invited position)
Department of Mechanical and Aeronautical Engineering
University of California, Davis, USA

¹<http://www.ag.jku.at/example/>

Jan., 2007 – Dec., 2009 Ph.D. Student in Computer Science and Applications
 University of Florence, ITALY
 Supervisors: Prof. Rida T. Farouki and Dr. Alessandra Sestini

Feb., 2006 – Nov., 2006 Computer programmer
 Business Intelligence/Data warehouse
 Bridge Consulting S.r.l. – Information Technology
 Florence, ITALY

Research interests

- Geometric and mathematical modeling
- Computer Aided Geometric Design (CAGD)
- Isogeometric analysis
- Approximation theory

Affiliations

2014 – present Società Italiana di Matematica Applicata e Industriale (SIMAI),
 Unione Matematica Italiana (UMI)

2013 European Women in Mathematics

2011 – present Society for Industrial and Applied Mathematics (SIAM) e SIAM
 Activity Group on Geometric Design

2007 – present Gruppo Nazionale per il Calcolo Scientifico (GNCS) dell'Istituto
 Nazionale di Alta Matematica F. Severi (INdAM)

Fellowships and research funding

- [P16] F. Premiali FOE 2014 (MIUR)
 Titolo: *Splines for accUrate NumeRics: adaptIve models for Simulation Environments (SUNRISE)*. **Role: principal investigator.**
- [P15] Future in Research Program 2013 (MIUR, Italy). Title: *Design of Reliable, Exact, and Application-oriented techniques for geometric Modeling and numerical Simulation (DREAMS)*.
 Project code: RBFR13FBI3. **Role: principal investigator (2014 - 2018).**
- [P14] GNCS research project 2017. Title: *Nuove tecniche numeriche per la risoluzione di problemi evolutivi mediante il metodo degli elementi di contorno*. Role: participant.
- [P13] GNCS research project 2016. Title: *Approccio isogeometrico e tecniche di quadratura per il metodo agli elementi di contorno in 3D*. Role: participant.

- [P12] GNCS research project 2015. Title: *Analisi Isogeometrica e metodi agli elementi al contorno*. Role: participant.
- [P11] GNCS research project 2014. Title: *Dall'Approssimazione all'Algebra Lineare: metodi numerici per l'Analisi Isogeometrica*. Role: participant.
- [P10] Industry-Academia Partnerships and Pathways (IAPP) — Marie Curie Actions (People, FP7). Call: FP7-PEOPLE-2012-IAPP, proposal number: 324340 (2013 - 2016). Title: *Exact and Adaptive Modeling and Simulation of the Air Passage of Aircraft Engines* (EXAMPLE). **Role: Marie Curie Experienced Researcher (2013)**.
- [P9] Intra-European Fellowships for career development (IEF) — Marie Curie Actions (People, FP7). Call: Marie Curie FP7-PEOPLE-2010-IEF, proposal number: 272089. Title: *PARAMeterization of computational Domains for ISoGeomEtric Analysis* (PARADISE). **Role: individual Marie Curie fellow (2011 - 2013)**.
- [P8] GNCS research project 2013. Title: *Studio di spazi con struttura di raffinamento per l'analisi isogeometrica*. Role: participant.
- [P7] GNCS (Gruppo Nazionale per il Calcolo Scientifico – INdAM) research project 2012. Title: *Metodi, algoritmi e strutture algebriche per la progettazione di moti*. Role: participant.
- [P6] Executive program for scientific and technological co-operation Italy–Slovenia, Ministry of Foreign Affairs, 2011–2013. Title: *Advanced methods for interpolation by Pythagorean Hodograph curves and related problems*. Role: participant.
- [P5] Austrian National Research Network. Title: *FWF S92 Industrial Geometry*. Role: participant (2011).
- [P4] European Marie–Curie Initial Training Network. Call: FP7-PEOPLE-2007-1-1-ITN (2008–2012). Title: *Shapes, Geometry and Algebra*² (SAGA). **Role: Marie Curie Experienced Researcher Position (2010)**.
- [P3] GNCS (INdAM) Young Researchers Program 2010. **Role: individual project**.
- [P2] CINECA fellowship to attend the Summer School on Scientific Visualization and 3D Interactive Computer Graphics, 9–th edition, CINECA, Casalecchio di Reno, Bologna, Italy (Jun. 15 - 26, 2009).
- [P1] PhD fellowship (XXII cycle), Università degli Studi di Firenze (Jan. 2007 - Dec. 2009).

Visiting

- Feb. 1 - 2, 2016: Institute of Applied Geometry, Johannes Kepler Universität Linz, Austria.
- Nov. 11 - 12, 2015: MTU Aero Engines AG, Munich, Germany.

²<http://www.saga-network.eu>

- Oct. 15 - 23, 2015: Department of Mechanical and Aeronautical Engineering University of California, Davis, USA.
- Feb. 24 - 28, 2014: Institute of Applied Geometry, Johannes Kepler Universität Linz, Austria.
- Nov. 17 - 19, 2013: MTU Aero Engines AG, Munich, Germany.
- Feb. 28 - Mar. 9, 2013: Department of Mechanical and Aeronautical Engineering University of California, Davis, USA.
- Nov. 21 - 23, 2012: Istituto di Matematica Applicata e Tecnologie Informatiche Enrico Magenes, Consiglio Nazionale delle Ricerche (CNR), Pavia, Italy.
- Sep. 24 - 28, 2012: Mathematics Department, University of Florence, Italy.
- Aug. 29 - Sep. 6, 2012: Department of Computer Science and Engineering, Seoul National University, South Korea.
- Mar. 26 - Apr. 7, 2012: Mathematics Department, "Tor Vergata" University, Rome, Italy.
- Jan. 30 - Feb. 1, 2012: Felix-Klein-Zentrum für Mathematik, Technische Universität Kaiserslautern, Germany.
- Jan. 23 - 27, 2012: Mathematics Department, University of Florence, Italy.

Invited lectures and seminars

Invited lectures at conferences and workshops

1. **ICNAAM 2017 (plenary):** *15th International Conference of Numerical Analysis and Applied Mathematics*, Thessaloniki, Greece (Sep. 25 - 30, 2017).
2. **Dagstuhl Seminar 2017:** *Geometric Modelling, Interoperability and New Challenges*, Schloss Dagstuhl, Germany (May 28 - Jun. 2, 2017).
3. **DK Statusseminar:** *Doctoral Program Computational Mathematics*, Strobl, Austria (28 - 30 Set., 2016).
4. **FOCM 2014:** Foundations of Computational Mathematics Conference. Workshop *Multiresolution and Adaptivity in Numerical PDEs*, organized by A. Buffa, A. Kunoth and P. Morin, Montevideo, Uruguay (Dec. 11 - 13, 2014).
5. **FWF NFN S117 Geometry + Simulation: 4th NFN seminar**, Universitätszentrum Obergurgl, Austria (Apr. 23, 2014).
6. **MAIA 2013 (plenary):** Multivariate Approximation and Interpolation with Applications, Erice, Italy (Sep. 25-30, 2013).
7. **CGTA 2013 (plenary):** Conference on Geometry: Theory and Applications, Ljubljana, Slovenia (Jun. 24 - 28, 2013).

8. **UMI 2011:** XIX Congresso dell'Unione Matematica Italiana (30 minutes communication), Bologna (Sept. 12 - 17, 2011).

Invited contribution to minisimposia

1. **FEF 2017:** *19th International Conference on Finite Elements in Flow Problems. Minisimposium Geometric Modeling and Mesh Generation*, organized by J. Zhang, H. Speleers, and S. Shontz, Rome, Italy (Apr. 5 - 7, 2017).
2. **SIMAI 2016:** *Società Italiana di Matematica Applicata e Industriale. Minisimposium Isogeometric Methods: theoretical and computational aspects*, organized by G. Sangalli and L. Tamellini, Milan, Italy (Sep. 13 - 16, 2016).
3. **SIAM-GD/SPM15:** *SIAM Conference on Geometric and Physical Modeling. Minisimposium Isogeometric Analysis on Complex Geometries*, organized by T. Takacs and G. Sangalli, Salt Lake City, Utah, USA (Oct. 12 - 14, 2015).
4. **ICIAM 2015:** International Congress on Industrial and Applied Mathematics. *Minisimposio Isogeometric methods and design-through-analysis tools in CAD/CAE*, Beijing, China (Aug. 10 - 14, 2015).
5. **CURVES and SURFACES 2014:** 8th International Conference Curves and Surfaces. *Minisymposium Isogeometric Analysis*, organized by A. Buffa, Paris, France (Jun. 12 - 18, 2014).
6. **AT 2013:** 14th International Conference on Approximation Theory. *Minisymposium IgA oriented spaces and bases*, organized by C. Manni and H. Speleers, San Antonio, Texas (Apr. 7 - 10, 2013).
7. **GAMM 2013:** 84th Annual Meeting of the International Association of Applied Mathematics and Mechanics. *Young Researchers' Minisymposium Isogeometric methods*, organized by Dominik Schillinger and Josef Kiendl, Novi Sad, Serbia (March 18 - 22, 2013).
8. **ACM 2013:** Advances in Computational Mechanics. *Symposium Isogeometric Methods*, organized by D. J. Benson, A. Reali, and Trond Kvamsdal, San Diego, California (Feb. 24 - 27, 2013).
9. **ECCOMAS 2012:** 6th European Congress on Computational Methods in Applied Sciences and Engineering. *Minisymposium Isogeometric Analysis*, organized by V. Calo, R. de Borst, T.J.R. Hughes, T. Kvamsdal, A. Reali, G. Sangalli, C.V. Verhoosel, Vienna, Austria (Sep. 10 - 14, 2012).
10. **ECMI 2012:** 17th European Conference on Mathematics for Industry 2012. *Minisymposium Isogeometric Analysis: Merging Computational Geometry and Numerical Simulation*, organized by B. Simeon and A.-V. Vuong, Lund, Sweden (Jul. 23 - 27, 2012).
11. **MMCS 2012:** Eighth International Conference on Mathematical Methods for Curves and Surfaces. *Minisymposium Isogeometric Analysis*, organized by J. Gravesen, Oslo, Norway (Jun. 28 - Jul. 3, 2012).

12. **SIAM–GD 2011:** SIAM Conference on Geometric and Physical Modeling. Minisymposium *Isogeometric Analysis 2: Analysis and Local Refinements* organized by F. Pelosi and M. L. Sampoli, Orlando, Florida, USA (Oct. 24 - 27, 2011).
13. **SIAM–AG 2011:** SIAM Conference on Applied Algebraic Geometry. Minisymposium *Locally Refined Splines, Spline Space and Isogeometric Analysis*, organized by T. Dokken, Raleigh, North Carolina, USA (Oct. 6 - 9, 2011).
14. **USNCCM 2011:** 11th US National Congress on Computational Mechanics, Minisymposium *Isogeometric methods*, organized by A. Reali, L. Beirao da Veiga, D. J. Benson, T. J. R. Hughes, and T. Kvamsdal, Minneapolis, Minnesota, USA (Jul. 25 - 28, 2011).

Invited seminars

1. *Hierarchical refinement with linear complexity*, Johannes Kepler Universität Linz, Austria (Feb. 1, 2016).
2. *On adaptive spline models based on hierarchical constructions*, Istituto di Matematica Applicata e Tecnologie Informatiche Enrico Magenes, Consiglio Nazionale delle Ricerche (CNR), Pavia, Italy (Nov. 21, 2012).
3. *Characterization and construction of the truncated hierarchical spline model*, Department of Computer Science and Engineering, Seoul National University, South Korea (Aug. 31, 2012).
4. *Adaptive approximation with truncated hierarchical B-splines*, Technische Universität Kaiserslautern, Germany (Jan. 30, 2012).
5. *Adaptive approximation with truncated hierarchical B-splines*, Università degli Studi di Firenze, Italy (Jan. 27, 2012).

Other seminars

1. *Adaptive techniques for isogeometric analysis*, Dipartimento di Matematica e Informatica "U. Dini", Università degli Studi di Firenze, Italy (May 9, 2014).
2. *Overview of hierarchical spline structures: from theory to the EXAMPLE project*, MTU Aero Engines AG, Munich, Germany (Apr. 30, 2013).
3. *Characterization and construction of the truncated hierarchical spline model*, FWF NFN S117 Geometry + Simulation kick-off meeting, Stift Vorau, Austria (Jul. 16, 2012).
4. *Truncated B-splines*, Johannes Kepler University Linz, Austria (Sep. 23, 2011).
5. *Spatial polynomial curves with different Pythagorean structures and associated frames*, Università degli Studi di Firenze, Italy (Jun. 23, 2008).

Conference presentations (speaker)

1. *Adaptivity with THB-splines*, Conference on Geometry: Theory and Applications, Kefermarkt, Austria (Jun. 8 - 12, 2015).
2. *Adaptive isogeometric methods: error estimation and convergence*, 3rd International Conference on Isogeometric Analysis, Trondheim, Norway (Jun. 1 - 3, 2015).
3. *Spline interpolation schemes for path planning with obstacle avoidance*, SMART 2014: First International Conference on Subdivision, Geometric and Algebraic Methods, Isogeometric Analysis and Refinability in Tuscany, Pontignano, Italy (Sep. 28 - 1 Oct. 1, 2014).
4. *On spline spaces of arbitrary degree and maximum smoothness over hierarchical tensor-product meshes*, SAGA final conference, Trento, Italy (Oct. 9 - 11, 2012).
5. *THB-splines: the truncated basis for hierarchical splines*, GMP 2012: Geometric Modeling and Processing, Huangshan, China (Jun. 20 - 22, 2012).
6. *Adaptive approximation with truncated hierarchical B-splines*, Isogeometric Analysis and Applications, Linz, Austria (Mar. 12 - 16, 2012).
7. *Adaptive approximation with truncated hierarchical B-splines*, New Trends in Applied Geometry 2012, Villa Cagnola, Italy (Feb. 12 - 17, 2012).
8. *Truncated B-splines*, SAGA Fall School 2011, Vilnius, Lithuania (Sep. 27 - 30, 2011).
9. *Adaptive refinement using normalized hierarchical B-splines*, Conference on Geometry: Theory and Applications, Stift Vorau, Austria (Jun. 20 - 24, 2011).
10. *Two constructions of normalized hierarchical splines*, New Trends in Applied Geometry, Hurdalsjoen, Norway (Feb. 20 - 25, 2011).
11. *On hierarchically refined tensor-product spline spaces*, Isogeometric Analysis 2011: Integrating Design and Analysis, Austin, Texas (Jan. 13 - 15, 2011).
12. *Algorithms for rational rotation-minimizing camera orientation control along curved paths*, Seventh International Conference on Curves and Surfaces, Avignon, France (Jun. 24 - 30, 2010).
13. *Design of rational rotation-minimizing rigid body motions by Hermite interpolation*, IN-DAM Meeting: New Frontiers in CAGD, Bertinoro, Italy (May 17 - 21, 2010).
14. *Design of rational rotation-minimizing rigid body motions by Hermite interpolation*, Les Journées du Groupe de Travail en Modélisation Géométrique, Dijon, France (Mar. 31 - Apr. 1, 2010).
15. *Rational rotation-minimizing motion design*, Conference on Geometry: Theory and Applications, Plzen, Czech Republic, (Jun. 29 - Jul. 2, 2009).
16. *Spatial polynomial curves with different Pythagorean structures and associated frames*, Seventh International Conference on Mathematical Methods for curves and surfaces, Tonsberg, Norway (Jun. 26 - Jul. 1, 2008).
17. *Characterization of spatial helical Pythagorean-hodograph quintic interpolants*, GNCS Biennial meeting, Montecatini Terme, Italy (Feb. 4 - 6, 2008).

Conference presentations (coauthor)

1. Cesare Bracco, Carlotta Giannelli, Alessandra Sestini, *An adaptive data reduction scheme based on hierarchical Hermite spline quasi-interpolation*, 9th International Conference on Mathematical Methods for Curves and Surfaces, Tønsberg, Norway (Jun., 23 - 28, 2016).
2. Cesare Bracco, Carlotta Giannelli, Alessandra Sestini, *A local THB-spline approach to scattered data fitting*, 9th International Conference on Mathematical Methods for Curves and Surfaces, Tønsberg, Norway (Jun., 23 - 28, 2016).
3. Carlotta Giannelli, Tadej Kanduč, Francesca Pelosi, Hendrik Speleers, *Hierarchical box splines and the weak boundary approach for PDEs*, 9th International Conference on Mathematical Methods for Curves and Surfaces, Tønsberg, Norway (Jun., 23 - 28, 2016).
4. Cesare Bracco, Carlotta Giannelli, *On the design of dual-compatible T-mesh refinement algorithms*, The Mathematics of finite elements and applications 2016, London, UK (Jun. 14 - 17, 2016).
5. R. T. Farouki, C. Giannelli, A. Sestini, *Identification and "reverse engineering" of Pythagorean-hodograph curves*, International Conference on Geometric Modeling and Processing, San Antonio, Texas, USA (Apr. 11 - 13, 2016).
6. A. Buffa, E. M. Garau, C. Giannelli, G. Sangalli, *Quasi-interpolants and local projections in isogeometric analysis*, International Congress on Industrial and Applied Mathematics, Beijing, China (Aug. 10 - 14, 2015).
7. R. T. Farouki, G. Gentili, C. Giannelli, A. Sestini, C. Stoppato, *Quaternionic polynomial problems for the construction of Pythagorean-hodograph curves*, Applied Geometric Algebra in Computer Science and Engineering, Barcelona, Spain (Jul. 29 - 31, 2015).
8. C. Bracco, C. Giannelli, F. Mazzia, A. Sestini, *Bivariate hierarchical Hermite spline quasi-interpolation*, New Trends in Numerical Analysis, Falerna, Italy (Jun. 18 - 21, 2015).
9. C. Giannelli, B. Jüttler, C. Manni, F. Pelosi, M. L. Sampoli, H. Speleers, *B-spline like discretization on three-directional meshes in Isogeometric Analysis*, Conference on Geometry: Theory and Applications, Kefermarkt, Austria (Jun. 8 - 12 Giu., 2015).
10. D. Mugnaini, C. Giannelli, A. Sestini, *Collision-free path planning using PH spline interpolation with tension parameter*, Conference on Geometry: Theory and Applications, Kefermarkt, Austria (Jun. 8 - 12, 2015).
11. C. Bracco, C. Giannelli, F. Mazzia, A. Sestini, *A hierarchical Hermite spline quasi-interpolant*, Conference on Geometry: Theory and Applications, Kefermarkt, Austria (Jun. 8 - 12 Giu., 2015).
12. C. Giannelli, B. Jüttler, C. Manni, F. Pelosi, M. L. Sampoli, H. Speleers, *Splines on regular triangulations and Isogeometric Analysis*, 3rd International Conference on Isogeometric Analysis, Trondheim, Norway (Jun. 1 - 3, 2015).

13. G. Kiss, C. Giannelli, U. Zore, B. Jüttler, D. Großmann, J. Barner, *Adaptive CAD model (re-)construction with THB-splines*, Geometric Modeling and Processing, Singapore (Jun. 29 - Jul. 1, 2014).
14. F. Pelosi, C. Giannelli, B. Jüttler, C. Manni, M. L. Sampoli, H. Speleers, *Non-standard discretizations in Isogeometric Analysis*, 8th International Conference Curves and Surfaces, Paris, France (Jun. 12 - 18, 2014).
15. M. L. Sampoli, C. Giannelli, B. Jüttler, C. Manni, F. Pelosi, H. Speleers, *Isogeometric Analysis with box splines: a preliminary study*, Dagstuhl Seminar Geometric Modeling, Dagstuhl, Germany (May 25 - 30, 2014).
16. D. Mokriš, C. Giannelli, B. Jüttler, *On the completeness of hierarchical tensor-product B-splines*, Isogeometric Analysis and Applications, Annweiler, Germany (Apr. 7 - 10, 2014).
17. B. Jüttler, C. Giannelli, *Algebraic and analytic results for truncated hierarchical B-splines*, SIAM Conference on Geometric and Physical Modeling, Denver, Colorado (Nov. 11 - 14, 2013).
18. A. Sestini, R. T. Farouki, C. Giannelli, M. L. Sampoli, *Rotation-minimizing conformal frames with application to ruled surfaces constructions*, 19th IMACS World Congress, Real Centro Universitario El Escorial-Maria Cristina, Madrid, Spain (Aug. 26 - 30, 2013).
19. D. Mokriš, C. Giannelli, B. Jüttler, *On the dimension of hierarchical B-spline spaces*, FWF NFN S117 Geometry + Simulation: 2nd NFN seminar, Universitätszentrum Obergurgl, Austria (Apr. 22 - 24, 2013).
20. G. Kiss, B. Jüttler, C. Giannelli, *Algorithms for THB-splines*, Eighth International Conference on Mathematical Methods for Curves and Surfaces, Oslo, Norway (Jun. 28 - Jul. 3, 2012).
21. A.-V. Vuong, C. Giannelli, B. Jüttler, B. Simeon, *Adaptive hierarchical local refinement in isogeometric analysis*, Isogeometric Analysis and Applications, Linz, Austria (12 - 16 Mar., 2012).
22. H. Speleers, C. Giannelli, B. Jüttler, *Normalized hierarchical B-splines*, International Conference on Multivariate Approximation, Hagen, Germany (Sep. 24 - 27, 2011).
23. B. Simeon, A.-V. Vuong, C. Giannelli, B. Jüttler, *Hierarchical local refinement in isogeometric analysis*, HOFEIM 2011 — Higher Order Finite Element and Isogeometric Methods, Krakow, Poland (Jun. 27 - 29, 2011).
24. R. T. Farouki, C. Giannelli, *Adapted and directed rotation-minimizing frames on space curves — theory, algorithms, and applications*, GMP 2008: Geometric Modeling and Processing, Hangzhou, China (Apr. 23 - 25, 2008).

Posters

1. *Spline spaces providing local adaptivity*, Marie Curie Researchers Symposium “SCIENCE – Passion, Mission, Responsibilities”, Warsaw, Poland (Sept. 25 - 27, 2011).

Other conferences, workshops, and courses attended

1. FWF NFN S117 Geometry + Simulation: 2nd NFN seminar, Universitätszentrum Obergurgl, Austria (Apr. 22 - 24, 2013).
2. GNCS meeting, Montecatini Terme, Italy (Nov. 15 - 16, 2012).
3. FWF NFN S117 Geometry + Simulation kick-off meeting, Stift Vorau, Austria (Jul. 16 - 18, 2012).
4. Fall School Shapes, Geometry, and Algebra, Kolympari, Greece (Oct. 4 - 8, 2010).
5. Computer Graphics Workshop, Firenze, Italy (Nov. 27, 2009).
6. Summer School on Scientific Visualization and 3D Interactive Computer Graphics, 9-th edition, CINECA, Casalecchio di Reno, Bologna, Italy (Jun. 15 - 26, 2009).
7. GNCS meeting, Montecatini Terme, Italy (Feb. 3 - 5, 2009).
8. Bertinoro International Spring School for Graduate Students in Computer Science, Bertinoro, Italy (Mar. 3 - 14, 2008).

Referee activities

International journals

- *Applied Mathematics and Computation (AMC)*, *Applied Numerical Mathematics (APNUM)*, *Computer-Aided Design (CAD)*, *Computer Aided Geometric Design (CAGD)*, *Calcolo (CALC)*, *Communications in Computational Physics (CICP)*, *Computer Methods in Applied Mechanics and Engineering (CMAME)*, *Computers & Mathematics with Applications (CMWA)*, *Graphical Models (GMOD)*, *Journal of Computational and Applied Mathematics (JCAM)*, *Journal of Symbolic Computation (JSC)*.

Grant

- Natural Sciences and Engineering Research Council of Canada (NSERC), Hungarian Scientific Research Fund (OTKA), National Fund for Scientific and Technological Development (FONDECYT) of the Chilean National Commission for Scientific and Technological Research (CONICYT).

Professional activities

Editorial activity

- **Special Issue of Computer Aided Geometric Design: Recent Trends in Theoretical and Applied Geometry.** Volume 31, issues 7-8, pages 329-612 (October 2014). Edited by Carlotta Giannelli, Kai Hormann, Emil Žagar.

Scientific and Technical Program Committees

- **IGA 2017: V International Conference on Isogeometric Analysis.** Pavia, Italy (Sep. 11 - 13, 2017).

- **GMP 2017:** *International Conference on Geometric Modeling and Processing*. Xiamen, China. (Apr. 17 - 19, 2017).

Organization

- **INdAM Workshop: DREAMS** — *INdAM workshop: Design of Reliable, Exact, and Application-oriented technologies for geometric Modeling and numerical Simulation*, organized with Hendrik Speleers, Rome (Jan. 22 - 26, 2018).
- **IGA 2017:** *V International Conference on Isogeometric Analysis*. Minisymposium “Local refinement and adaptivity for IGA”, organized with Hendrik Speleers and Tor Dokken, Pavia, Italy (Sep. 11 - 13, 2017).
- **MMCS 2016:** *9th International Conference on Mathematical Methods for Curves and Surfaces*. Minisymposium “Multivariate splines and adaptivity”, Tønsberg, Norvegia (Jun. 23 - 28, 2016).
- **DREAMS 2016:** *Futuro in Ricerca 2013 Workshop*, organized with Hendrik Speleers, University of Rome “Tor Vergata”, Italy (Jan. 26 - 27, 2016).
- **ICIAM 2015:** *International Congress on Industrial and Applied Mathematics*. Minisymposium “Isogeometric methods and design-through-analysis tools in CAD / CAE”, organized with Annalisa Buffa, Beijing, China (Aug. 10 - 14, 2015).
- **CGTA 2015:** *Conference on Geometry: Theory and Applications*. Minisymposium “Isogeometric analysis”, Kefermarkt, Austria (Jun. 8 - 12, 2015).
- **DREAMS 2015:** *Futuro in Ricerca 2013 Workshop*, organized with Hendrik Speleers, University of Florence, Italy (Feb. 19 - 20, 2015).
- **SIMAI 2014:** *Società Italiana di Matematica Applicata e Industriale*. Minisymposium “From computer aided geometric design to industrial CAD modeling and simulations”, organized with Carla Manni, Taormina, Italia (Jul. 7 - 10, 2014).
- **2013 Women in Mathematics Summer School Minicourse:** *Isogeometric Analysis*, International Centre for Theoretical Physics (ICTP), Trieste, Italy (May 27 - Jun. 1, 2013).

Initiatives

- **SYRI 2014:** SIMAI 2014 Young Researchers for Industry Initiative, Taormina, Italia (Jul. 9, 2014). The contribution to the initiative entitled *Accurate Computer Aided Design Methods for High-quality Motion Planning* was included in the SIMAI booklet presented at the “Borsa della ricerca” event, Bologna, Italy (Mag. 13 -14, 2014).

PhD committees

- U. Zore, *Constructions and Properties of Adaptively Refined Multilevel Spline Spaces*, Johannes Kepler Universität Linz, Austria.

Supervision of students and postdoctoral fellows

- 2016 – Co-supervision of 1 Master student in Computer Science, Univeristy of Florence.
- 2015 – Co-supervision of 1 Master student in Mathematics, Univeristy of Florence.
- 2015 – Supervision of 1 Postdoc within [P1], INdAM c/o University of Florence.
- 2014 – Co-supervision of 1 Postdoc within [P1], Univeristy of Florence.
- 2014 – Co-supervision of 1 PhD student, Univeristy of Insubria.
- 2014 – Supervision of 1 graduate student within [P1], INdAM c/o University of Florence.
- 2011 – 2013 Co-supervision of 2 PhD students, JKU Linz.

Teaching

- *Complementi di Analisi Numerica*, Master Degree Course in Mathematics, University of Florence, academic year 2016/2017.
- Lecturer of *Numerical calculus and programming*, Degree Course in Chemistry, University of Florence, since academic year 2014/2015.
- Series of lectures on *Numerical Methods for Graphics*, Degree Courses in Computer Science, University of Florence, academic year 2009/2010.
- Series of lectures on *Numerical Calculus with MATLAB*, Degree Courses in Computer Science, University of Florence, academic year 2007/2008.

Bibliography

- [1] R. T. FAROUKI, C. GIANNELLI, C. MANNI, AND A. SESTINI (2008), Identification of spatial PH quintic Hermite interpolants with near-optimal shape measures, *Computer Aided Geometric Design* **25**, 274–297.
[doi:10.1016/j.cagd.2007.09.007]
- [2] R. T. FAROUKI, C. GIANNELLI, AND A. SESTINI (2009), Helical polynomial curves and double Pythagorean hodographs I. Quaternion and Hopf map representations, *Journal of Symbolic Computation* **44**, 161-179.
[doi:10.1016/j.jsc.2008.07.004]
- [3] R. T. FAROUKI, C. GIANNELLI, AND A. SESTINI (2009), Helical polynomial curves and double Pythagorean hodographs II. Enumeration of low-degree curves, *Journal of Symbolic Computation* **44**, 307–332.
[doi:10.1016/j.jsc.2008.07.003]

- [4] R. T. FAROUKI AND C. GIANNELLI (2009), Spatial camera orientation control by rotation-minimizing directed frames, *Computer Animation and Virtual Worlds* **20**, 457–472.
[doi:10.1002/cav.274]
- [5] R. T. FAROUKI, C. GIANNELLI, C. MANNI, AND A. SESTINI (2009), Quintic space curves with rational rotation–minimizing frames, *Computer Aided Geometric Design* **26**, 580–592.
[doi:10.1016/j.cagd.2009.01.005]
- [6] R. T. FAROUKI, C. GIANNELLI, AND A. SESTINI (2010), Geometric design using space curves with rational rotation–minimizing frames, (M. Daehlen et al., eds.) *Lecture Notes in Computer Science*, Vol. 5862, pp. 194–208, Springer.
[doi:10.1007/978-3-642-11620-9_13]
- [7] C. GIANNELLI, L. BIARD (2011), On the interpolation of concentric curvature elements, *Computer–Aided Design* **43**, 586–597.
[doi:10.1016/j.cad.2011.02.003]
- [8] A.-V. VUONG, C. GIANNELLI, B. JÜTTLER, AND B. SIMEON (2011), A hierarchical approach to adaptive local refinement in isogeometric analysis, *Computer Methods in Applied Mechanics and Engineering* **200**, 3554–3567 .
[doi:10.1016/j.cma.2011.09.004]
- [9] R. T. FAROUKI, C. GIANNELLI, C. MANNI, AND A. SESTINI (2012), Design of rational rotation–minimizing rigid body motions by Hermite interpolation, *Mathematics of Computation* **81**, 879–903.
[doi:10.1090/S0025-5718-2011-02519-6]
- [10] R. T. FAROUKI, C. GIANNELLI, AND A. SESTINI (2012), An interpolation scheme for designing rational rotation–minimizing camera motion, *Advances in Computational Mathematics* **38**, 63–82.
[doi:10.1007/s10444-011-9226-z]
- [11] C. GIANNELLI, B. JÜTTLER, AND H. SPELEERS (2012), THB–splines: the truncated basis for hierarchical splines, *Computer Aided Geometric Design* **29**, 485–498 .
[doi:10.1016/j.cagd.2012.03.025]
- [12] C. GIANNELLI, B. JÜTTLER (2013), Bases and dimensions of hierarchical bivariate tensor–product spline spaces, *Journal of Computational and Applied Mathematics* **239**, 162–178.
[doi:10.1016/j.cam.2012.09.031]
- [13] C. GIANNELLI, B. JÜTTLER (2013), Local and adaptive refinement with hierarchical B–splines, *Bollettino della Unione Matematica Italiana* **6**, 735–740.
- [14] C. GIANNELLI, H. SPELEERS, B. JÜTTLER (2014), Strongly stable bases for adaptively refined multilevel spline spaces, *Advances in Computational Mathematics* **40**, 459–490.
[doi:10.1007/s10444-013-9315-2]

- [15] G. KISS, B. JÜTTLER, C. GIANNELLI (2014), Algorithms and data structures for truncated hierarchical B-splines, *Lecture Notes in Computer Science* (M. Floater et al., eds.) *Lecture Notes in Computer Science*, Vol. 8177, pp. 304–323, Springer.
[doi:10.1007/978-3-642-54382-1_18]
- [16] R. T. FAROUKI, C. GIANNELLI, M. L. SAMPOLI, A. SESTINI (2014), Rotation-minimizing osculating frames, *Computer Aided Geometric Design* **31**, 27–42.
[doi:10.1016/j.cagd.2013.11.003]
- [17] D. MOKRIŠ, B. JÜTTLER, C. GIANNELLI (2014), On the completeness of hierarchical tensor-product B-splines, *Journal of Computational and Applied Mathematics* **271**, 53–70.
[doi:10.1016/j.cam.2014.04.001]
- [18] G. KISS, C. GIANNELLI, U. ZORE, B. JÜTTLER, D. GROSSMANN, J. BARNER (2014), Adaptive CAD model (re-)construction with THB-splines, *Graphical models* **76**, 273–288.
[doi:10.1016/j.gmod.2014.03.017]
- [19] R. T. FAROUKI, C. GIANNELLI, A. SESTINI (2015), Identification and “reverse engineering” of Pythagorean-hodograph curves, submitted. *Computer Aided Geometric Design* **34**, 21–36.
[doi:10.1016/j.cagd.2015.04.001]
- [20] A. BUFFA, C. GIANNELLI (2016), Adaptive isogeometric methods with hierarchical splines: error estimator and convergence, *Mathematical Models and Methods in Applied Sciences* **26**, 1–25.
[doi:10.1142/S0218202516500019]
- [21] R. T. FAROUKI, G. GENTILI, C. GIANNELLI, A. SESTINI, C. STOPPATO (2016), Solution of a class of quadratic quaternionic equations, *Journal of Symbolic Computation* **74**, 140–151.
[doi:10.1016/j.jsc.2015.06.007]
- [22] C. GIANNELLI, B. JÜTTLER, S. K. KLEISS, A. MANTZAFLARIS, B. SIMEON, J. ŠPEH (2016), THB-splines: an effective mathematical technology for adaptive refinement in geometric design and isogeometric analysis, *Computer Methods in Applied Mechanics and Engineering* **299**, 337–365.
[doi:10.1016/j.cma.2015.11.002]
- [23] R. T. FAROUKI, C. GIANNELLI, A. SESTINI (2016), Local modification of Pythagorean-hodograph quintic spline curves using the B-spline form, *Advances in Computational Mathematics* **42**, 199–225.
[doi:10.1007/s10444-015-9419-y]
- [24] C. BRACCO, C. GIANNELLI, F. MAZZIA, A. SESTINI (2016), Bivariate hierarchical Hermite spline quasi-interpolation, *BIT Numerical Mathematics* **56**, 1165–1188.
[doi:10.1007/s10543-016-0603-3]

- [25] C. GIANNELLI, D. MUGNAINI, A. SESTINI (2016), Path planning with obstacle avoidance by G^1 PH quintic splines, *Computer-Aided Design* **75–76**, 47–60.
[doi:10.1016/j.cad.2016.02.004]
- [26] A. BUFFA, E. M. GARAU, C. GIANNELLI, G. SANGALLI (2016), On quasi-interpolation operators in spline spaces, in: Building Bridges: Connections and Challenges in Modern Approaches to Numerical Partial Differential Equations (G.R. Barrenechea et al., eds.). *Lecture Notes in Computational Science and Engineering*, Vol. 114, pp. 73-91.
[doi:10.1007/978-3-319-41640-3_3]
- [27] A. BUFFA, C. GIANNELLI, P. MORGENSTERN, D. PETERSEIM (2016), Complexity of hierarchical refinements for strictly admissible meshes, *Computer Aided Geometric Design* **47**, 83–92.
[doi:10.1016/j.cagd.2016.04.003]
- [28] F. PELOSI, C. GIANNELLI, C. MANNI, M. L. SAMPOLI, H. SPELEERS (2017), Splines over regular triangulations in numerical simulations, *Computer-Aided Design* **82**, 100–111.
[doi:10.1016/j.cad.2016.08.002]
- [29] R. T. FAROUKI, G. GENTILI, C. GIANNELLI, A. SESTINI, C. STOPPATO (2017), A comprehensive characterization of the set of polynomial curves with rational rotation-minimizing frames, *Advances in Computational Mathematics* **43**, 1–24.
[doi:10.1007/s10444-016-9473-0]
- [30] T. KANDUČ, C. GIANNELLI, F. PELOSI, H. SPELEERS (2017), Adaptive isogeometric analysis with hierarchical box splines, *Computer Methods in Applied Mechanics and Engineering* **316**, 817–838.
[doi:10.1016/j.cma.2016.09.046]
- [31] R. T. FAROUKI, C. GIANNELLI, D. MUGNAINI, A. SESTINI (2017), Path planning with Pythagorean-hodograph curves for unmanned or autonomous vehicles, *Journal of Aerospace Engineering*, in press.
[doi:10.1177/0954410017690550]
- [32] C. BRACCO, C. GIANNELLI, A. SESTINI (2017), Adaptive scattered data fitting by extension of local approximations to hierarchical splines, *Computer Aided Geometric Design*, in press.
- [33] M. DONATELLI, C. GIANNELLI, D. MUGNAINI, A. SESTINI (2017), Curvature continuous path planning and path finding based on PH splines with tension, submitted.

Theses

- *Rational moving frames on polynomial space curves: theory and applications*, PhD Thesis, Università degli Studi di Firenze (2010).

- *Metodi e algoritmi per il cambiamento di rappresentazione di curve di Bézier razionali piane e loro applicazioni nel CAD*, Tesi di Laurea, Università degli Studi di Firenze (2006).