

Klara Mundilova

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Education

- 2019 – present PhD candidate, Computer Science, Massachusetts Institute of Technology
Thesis Title: „Gluing and Creasing Paper along Curves: Computational Methods for Analysis and Design of Compositions of Developable Surfaces“
Supervisor: Erik Demaine
- 2017 – 2019 PhD candidate, Technical Mathematics, TU Wien
Supervisors: Helmut Pottmann and Christian Müller
- 2014 – 2017 Master of Science, Technical Mathematics, TU Wien
Thesis Title: “Geometry and Interactive Design of Curved Creases”
Supervisor: Helmut Pottmann
Graduation with Distinction
- 2010 – 2014 Bachelor of Science, Technical Mathematics, TU Wien
Thesis Title: “Lineare Weingarten Kanalfächen”
Supervisor: Udo Hertrich-Jeromin

Work Experience

- 10/2020 – 04/2021 Lecturer and Project Assistant (8h/week)
Institute for Structure and Design, University of Innsbruck, Austria
- Co-supervised a seminar for graduate students for the design and fabrication of curved crease origami shapes.
 - Developed plug-ins for interactive design of shapes with curved creases.
- 10/2017 – 09/2019 University and FWF Project Assistant (30h – 40h/week)
Institute of Discrete Mathematics and Geometry, TU Wien, Austria
- Developed mathematical approaches to describe curved crease origami shapes, such as the folded Vesica Piscis.
 - Taught a geometry course for graduate architecture students in English and multiple undergraduate geometry recitations.
- 08/2015 – 02/2017 Programmer (20h – 28.5h/week)
Rechenraum, Vienna, Austria
- Developed and implemented geometric data processing algorithms in C# and C++.
- 08/2014 – 09/2017 Teaching Assistant (12.5h – 15h/week)
Institute of Discrete Mathematics and Geometry, TU Wien, Austria
- Taught multiple introductory geometry recitations and assisted with the supervision of exams.

Teaching

Massachusetts Institute of Technology, USA

6.042	Mathematics for Computer Science Spring 2021, Fall 2021, Fall 2022	Teaching Assistant
6.849	Geometric Folding Algorithms Fall 2020	Teaching Assistant

University of Innsbruck, Austria

847383	Structure and Geometry Fall 2020	Seminar
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TU Wien, Austria

104.361	Geometry Optimization and Discretization Fall 2017	Lecture
104.404	Projective Geometry Spring 2018	Recitation
104.361	Geometry Optimization and Discretization Fall 2014, Fall 2015, Fall 2016	Recitation
113.077	Basic Course in Geometry for Architects Fall 2014, Spring 2015, Fall 2015, Spring 2016, Spring 2017	Recitation
104.218	Preparatory Course in Descriptive Geometry Fall 2015, Fall 2016	Recitation

Awards and Fellowships

2023	David S. Y. (1962) and Harold Wong Fellowship
2022	American Association of University Women International Fellowship
2022	Graduate Women International Fay Weber Award
2019	Akamai MIT Presidential Graduate Fellowship
2018	Christiane Hörbiger Preis

Publications

- [1] K. Mundilova, E. Demaine, R. Lang, and T. Tachi. Curved-Crease Origami Spirals Constructed from Reflected Cones, Bridges Conference Proceedings, 2023.

- [2] * R. Kraft, R. Maleczek, K. Mundilova, and T. Tachi, “From Quad Filling to Wrinkled Surfaces”, *Advances in Architectural Geometry*, 2023.
- [3] A. Parra Rubio, K. Mundilova, D. Preiss, E. Demaine, and N. Gershenfeld, “Kirigami Corrugations: Strong, Modular, and Programmable Plate Lattices”, *Proceedings of the ASME*, 2023.
- [4] P. Zhang, J. Chiang, X. Fan, and K. Mundilova, “Local Decomposition of Hexahedral Singular Nodes into Singular Curves”, *Computer-Aided Design*, vol. 158, 2023.
- [5] * T. Hull, A. Lubiw, K. Mundilova, C. Nara, J. Tkadlec, and R. Uehara, “Quasi-Twisting Convex Polyhedra”, *34th Canadian Conference Computational Geometry (CCCG)*, 2022.
- [6] * E. Demaine, K. Mundilova, and T. Tachi, “Locally Flat and Rigidly Foldable Discretizations of Conic Crease Patterns with Reflecting Rule Lines”, *Proceedings of the International Conference on Geometry and Graphics (ICGG)*, 2022.
- [7] K. Mundilova, E. Demaine, R. Foschi, R. Kraft, R. Maleczek, and T. Tachi, “Lotus: A Curved Folding Tool for Grasshopper”, *Proceedings of ACADIA Conference (2021)*.
- [8] * O. Aichholzer, H. Akitaya, K. Cheung, E. Demaine, M. Demaine, S. Fekete, L. Kleist, I. Kostitsyna, M. Löffler, Z. Masárová, K. Mundilova, and C. Schmidt, “Folding Polyominoes with Holes into a Cube”, *Computational Geometry: Theory and Applications*, vol. 93, 2021.
- [9] * R. Foschi, R. Kraft, R. Maleczek, K. Mundilova, and T. Tachi, “How to Use Parametric Curved Folding Design Methods – A Case Study and Comparison”, *Proceedings of IASS Annual Symposia*, no. 23, 2020.
- [10] * R. Maleczek, K. Mundilova and T. Tachi, “Curved Crease Edge Rounding of Polyhedral Surfaces”, *Proceedings of the AAG Conference*, 2020.
- [11] * K. Czajkowski, E. Demaine, M. Demaine, K. Eppling, R. Kraft, K. Mundilova, and L. Smith, “Folding Small Polyominoes into a Unit Cube”, *32nd Canadian Conference on Computational Geometry (CCCG)*, 2020.
- [12] * E. Demaine, M. Demaine, and K. Mundilova, “Design of Circular-Arc Curved Creases of Constant Fold Angle”, *Proceedings of Bridges Conference*, 2020.
- [13] C. Jiang, K. Mundilova, F. Rist, J. Wallner, and H. Pottmann, “Curve-pleated Structures”, *ACM Transactions on Graphics (TOG)*, 38(6): 169:1-169:13, 2019.
- [14] K. Mundilova, “On Mathematical Folding of Curved Crease Origami: Sliding Developables and Parametrizations of Folds into Cylinders and Cones”, *Computer-Aided Design*, vol. 115, 2019.
- [15] K. Mundilova, “Curved Crease Folds of Spherical Polyhedra with Regular Faces”, *Proceedings of Bridges Conference*, 2019.
- [16] * O. Aichholzer, H. Akitaya, K. Cheung, E. Demaine, M. Demaine, S. Fekete, L. Kleist, I. Kostitsyna, M. Löffler, Z. Masárová, K. Mundilova, C. Schmidt, “Folding Polyominoes with Holes into a Cube”, *31st Canadian Conference on Computational Geometry (CCCG)*, 2019.
- [17] K. Mundilova and T. Wills, “Folding the Vesica Piscis”, *Proceedings of Bridges Conference*, 2018.

* Authors are listed in alphabetical order.

[18] U. Hertrich-Jeromin, K. Mundilova and E. Tjaden, “Channel Linear Weingarten Surfaces”, *Journal of Geometry and Symmetry in Physics*, vol. 40, p. 25–33, 2015.

Theses:

[19] In preparation: “Gluing and Creasing Paper along Curves: Computational Methods for Analysis and Design of Compositions of Developable Surfaces”, PhD Thesis, MIT.

[20] “Geometry and Interactive Design of Curved Creases”, Master Thesis, TU Wien.

[21] “Lineare Weingarten Kanalflächen”, Bachelor Thesis, TU Wien.

Talks

- Art-inspired Curved-crease Origami Design, Haystack Labs, Haystack Mountain School of Crafts, Maine, USA, August 2023.
- Locally Flat and Rigidly Foldable Discretizations of Conic Crease Patterns with Reflecting Rule Lines, OrigaMIT Convention, Boston, Massachusetts, November 2022.
- Locally Flat and Rigidly Foldable Discretizations of Conic Crease Patterns with Reflecting Rule Lines, International Conference on Geometry and Graphics, online, August 2022.
- Lotus: A curved folding tool for Grasshopper, ACADIA Conference, online, November 2021.
- Architecture & Mathematics: How we Collaborate, Invited panelist at the DigitalFUTURES Talk with T. Knight, E. Demaine, and R. Maleczek, moderated by D. Koschitz and R. Brackett III, online, December 2021.
- Curved Crease Edge Rounding of Polyhedral Surfaces, Advances in Architectural Geometry Conference 2020, online, April 2021.
- Design of Curved Creases with Lotus, FoldFest 2021, online, April 2021.
- Lotus: Grasshopper components for curved folding, Guest Lecture, Pratt Institute of Design, online, March 2021.
- Design of Circular-Arc Curved Creases of Constant Fold Angle, Bridges Conference, online, 2020.
- Spherical Polyhedra with Regular Faces, Bridges Conference, Linz, Austria, 2019.
- On Mathematical Paper Folding, Symposium on Solid and Physical Modelling, Vancouver, Canada, 2019.
- On Mathematical Paper Folding, Symposium of Origami and Deployable Mechanisms, Okinawa, Japan, 2019.
- Origami Research (presented with Erik Demaine), OrigaMIT Convention, Boston, Massachusetts, 2018.
- Curved Crease Paper Folding with Rigid Rulings, ESI Workshop on Rigidity and Flexibility of Geometric Structures, Vienna, 2018.

- Folding the Vesica Piscis, Bridges Conference, Stockholm, Sweden, 2018.
- Symmetric Folded D-Forms from a Cylinder and Two Cones, Conference on Curves and Surfaces, Arcachon, France, 2018.
- Geometry and Interactive Design of Curved Creases, Conference on Geometry, Pilsen, Czech Republic, 2017.

Extracurricular Activities

07/2013 – 06/2015	Elected Student Representative of Technical Mathematics, TU Wien
07/2013 – 10/2016	Student member of the Curricular Commission of Technical Mathematics, TU Wien
01/2012 – 06/2016	Student member in the Council of the Faculty of Mathematics and Geoinformation, TU Wien