

Klara Mundilova

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Education

- 2019 – present PhD candidate, Computer Science, Massachusetts Institute of Technology
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 Kanalflächen
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.
 - Collaborated with architects and material scientists on the development of large-scale wooden structures 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

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| 6.042 | Mathematics for Computer Science Spring 2021, Fall 2021, Fall 2022 | TA |
| 6.849 | Geometric Folding Algorithms Fall 2020 | TA |

University of Innsbruck, Austria

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| 847383 | Structure and Geometry Fall 2020 | Seminar |
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TU Wien, Austria

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| 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 and 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 and Fall 2016 | Recitation |

Awards and Fellowships

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| 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

Papers

- [1] P. Zhang, J. Chiang, X. Fan, and K. Mundilova, *Local Decomposition of Hexahedral Singular Nodes into Singular Curves*, Computer-Aided Design, vol 158, 2023.
- [2] T. Hull, A. Lubiw, K. Mundilova, C. Nara, J. Tkadlec, and R. Uehara, *Quasi-Twisting Convex Polyhedra*, 34th Canad. Conf. Compute. Geom., Aug. 2022.

- [3] E. Demaine, K. Mundilova, and T. Tachi, *Locally Flat and Rigidly Foldable Discretizations of Conic Crease Patterns with Reflecting Rule Lines*, to appear in Proceedings of ICGG, 2022.
- [4] K. Mundilova, E. Demaine, R. Foschi, R. Kraft, R. Maleczek, and T. Tachi, *Lotus: A curved folding tool for Grasshopper*, to appear in Proceedings of ACADIA, 2021.
- [5] R. Foschi, R. Kraft, R. Maleczek, K. Mundilova and T. Tachi, *Comparison of computational curved folding design methods*, Proceedings of IASS, 2021.
- [6] R. Maleczek, K. Mundilova and T. Tachi, *Curved Crease Edge Rounding of Polyhedral Surfaces*, Proceedings of the AAG Conference, 2020.
- [7] E. Demaine, M. Demaine and K. Mundilova, *Design of Circular-Arc Curved Creases of Constant Fold Angle*, Proceedings of Bridges 2020: Mathematics, Art, Music, Architecture, Education, Culture, p. 129–136, 2020.
- [8] C. Jiang, K. Mundilova, F. Rist, J. Wallner, H. Pottmann, *Curve-pleated structures*. ACM Trans. Graph. 38(6): 169:1-169:13, 2019.
- [9] K. Mundilova, *On mathematical folding of curved crease origami: Sliding developables and parametrizations of folds into cylinders and cones*, Computer-Aided Design, p. 34–41, Volume 115, 2019.
- [10] K. Mundilova, *Curved Crease Folds of Spherical Polyhedra with Regular Faces*, Proceedings of Bridges 2019: Mathematics, Art, Music, Architecture, Education, Culture, p. 423–426, 2019.
- [11] 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*, CCCG, p. 164-170, 2019.
- [12] K. Mundilova and T. Wills, *Folding the Vesica Piscis*, Proceedings of Bridges 2018: Mathematics, Art, Music, Architecture, Education, Culture, p. 535–538, 2018.
- [13] U. Hertrich-Jeromin, K. Mundilova and E. Tjaden, *Channel Linear Weingarten Surfaces*, J. Geom. Symmetry Phys. 40 (2015), 25–33. Preprint on arXiv:1507.03394.

Theses

- [14] K. Mundilova, *Geometry and Interactive Design of Curved Creases*, Master Thesis, TU Wien.
- [15] K. Mundilova, *Lineare Weingarten Kanalflächen*, Bachelor Thesis, TU Wien.

Talks

1. *Locally Flat and Rigidly Foldable Discretizations of Conic Crease Patterns with Reflecting Rule Lines*, International Conference on Geometry and Graphics 2022, August 2022.
2. *Lotus: A curved folding tool for Grasshopper*, ACADIA Conference, November 2021.
3. *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, December 2021.
4. *Curved Crease Edge Rounding of Polyhedral Surfaces*, Advances in Architectural Geometry Conference 2020, online, April 2021.
5. *Design of Curved Creases with Lotus*, FoldFest 2021, April 2021.

6. *Lotus: Grasshopper components for curved folding*, Guest Lecture, Pratt Institute of Design, March 2021.
7. *Design of Circular-Arc Curved Creases of Constant Fold Angle*, Bridges Conference, online, 2020.
8. *Spherical Polyhedra with Regular Faces*, Bridges Conference, Linz, Austria, 2019.
9. *On Mathematical Paper Folding*, the Symposium on Solid and Physical Modelling, Vancouver, Canada, 2019.
10. *On Mathematical Paper Folding*, the Symposium of Origami and Deployable Mechanisms, Okinawa, Japan, 2019.
11. *Origami Research* (presented with Erik Demaine), the OrigaMIT Convention, Boston, Massachusetts, 2018.
12. *Curved Crease Paper Folding with Rigid Rulings*, ESI Workshop on Rigidity and Flexibility of Geometric Structures, Vienna, 2018.
13. *Folding the Vesica Piscis*, Bridges Conference, Stockholm, Sweden, 2018.
14. *Symmetric Folded D-Forms from a Cylinder and Two Cones*, Conference on Curves and Surfaces, Arcachon, France, 2018.
15. *Geometry and Interactive Design of Curved Creases*, Conference on Geometry, Pilsen, Czech Republic, 2017.

Extracurricular Activities

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| 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 |