

Wöden B. Kusner

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| CONTACT INFORMATION | <p>Institute of Analysis and Number Theory Graz University of Technology Kopernikusgasse 24/II 8010 Graz, AUSTRIA</p> | <p>☎ +43 650 743 8431 ☎ +1 413 225 1323 ✉ wkusner@gmail.com</p> |
| CITIZENSHIP | USA | |
| RESEARCH INTERESTS | Discrete and Metric Geometry, Topological and Geometric Frustration, Emergent Phenomena, Geometric Analysis, Geometric Measure Theory, Integral Geometry, Representation Theory | |
| EDUCATION | <p>University of Pittsburgh, Pittsburgh, PA USA</p> <p>Ph.D., Mathematics, August 2014 Advisor: Professor Thomas C. Hales Dissertation: <i>Bounds on packing density via slicing</i></p> <p>M.A., Mathematics, August 2010</p> <p>Haverford College, Haverford, PA USA</p> <p>B.S., Mathematics, May 2007 Advisor: Professor John J. Flynn Thesis: <i>Results in sphere packing density</i></p> | |
| ACADEMIC APPOINTMENTS | <p>Postdoctoral Researcher Institute of Analysis and Number Theory Graz University of Technology</p> <p>Visiting Scholar Erwin Schrödinger International Institute University of Vienna</p> <p>Visiting Scholar ICERM Brown University</p> | <p>September 2014 to present</p> <p>Fall 2014</p> <p>Spring 2015</p> |
| PAPERS | <p>Rob Kusner, Wöden Kusner, Jeff Lagarias and Senya Shlosman. The twelve spheres problem. <i>in preparation/under review</i></p> <p>Thomas Hales and Wöden Kusner. Packings of regular pentagons in the plane. <i>ArXiv preprint</i>: http://arxiv.org/abs/1602.07220</p> <p>Yoav Kallus and Wöden Kusner. The local optimality of the double lattice packing. <i>Discrete Comput. Geom.</i> 56(2): 449-471, 2016. http://arxiv.org/abs/1509.02241</p> <p>Wöden Kusner. On the densest packing of polycylinders in any dimension. <i>Discrete Comput. Geom.</i> 55(3): 638-641, 2016. http://arxiv.org/abs/1405.0497</p> <p>Wöden Kusner. An upper bound on packing density for circular cylinders of high aspect ratio. <i>Discrete Comput. Geom.</i> 52(4): 964-972, 2014. http://arxiv.org/abs/1309.6996</p> | |

TALKS AND
CONFERENCES

- JMM Special Session: *Critical packings, rigidity, and the radius function*. January 2017
- TU Graz, Fall School: Discrete Geometry and Topology: *Critical packings, rigidity, and the radius function*. September 30, 2016
- AIM Workshop on Soft Packings, Nested Clusters and Condensed Matter: *Configurations of spheres*. September 22, 2016
- ICERM Workshop on Unusual Configuration Spaces. September 2016
- Algebra, Combinatorics, and Geometry Seminar, University of Pittsburgh: *Configurations of spheres*. August 25, 2016
- MCQMC, Stanford: *Configurations of points with respect to discrepancy and uniform distribution*. August 17, 2016
- Summer Research Program, MSRI: *Critical packings, rigidity, and the radius function*. August 4, 2016
- Special Session on New Developments in Discrete and Intuitive Geometry, AMS Spring Southeastern Sectional Meeting: *Configurations of points with respect to discrepancy and uniform distribution*. March 6th, 2016
- Advanced Topics Seminar, TU Graz: *Configurations of spheres*. January 22nd, 2016
- Zahlentheoretisches Kolloquium, TU Graz: *Problems with packing periodicity*. December 11th, 2015
- ICERM Research Seminar, Brown University: *Can rods pack space more densely than disks pack in the plane?* April 28th, 2015
- ICERM Postdoc and Graduate Student Seminar, Brown University: *Spherical discrepancy*. April 9, 2015
- Working Problems Session, TU Graz: *Computing spherical cap discrepancy: proof of concept*. January 22, 2015
- Guest Lecture, TU Graz: *Introduction to packing problems*. January 19, 2015.
- Large Structures Seminar, Aalto University: *Packing density bounds in higher dimensions*. November 22, 2014
- ESI Workshop: *A brief analysis of regular pentagon packings in the plane*. October 27, 2014.
- Researcher, IAS – PCMI: Mathematics and Materials. July 2014.
- Oberwolfach Seminar: Recent Methods in Sphere Packing and Optimization: *Packing polycylinders*. June 2014
- Dissertation Defense, University of Pittsburgh: *Bounds on packing density via slicing*. May 22, 2014
- Seminar, TU Graz: *Packing density bounds via slicing*. May 8, 2014
- Erdős Memorial Lectures, University of Memphis: *Revisiting Bezdek and Kuperberg: A sharp upper bound for the packing density of polycylinders in higher dimensions*. March 2014
- Fields Institute Workshop in Discrete Geometry, Fields Institute. November 2013

Graduate Student Seminar, University of Pittsburgh: *Some packing problems and an upper bound*. March 28, 2013

Dietrich School of Arts and Sciences Graduate Expo, University of Pittsburgh: *Packing cylinders with high aspect ratio*. March 23, 2013

Algebra, Combinatorics and Geometry Seminar, University of Pittsburgh: *An upper bound on packing density for circular cylinders with high aspect ratio*. February 12, 2013

Topological Dynamics Workshop, Isaac Newton Institute: *Packing circular cylinders*. November 2012

IMA Summer School in Topological Methods, University of Pennsylvania. 2011

Graduate Algebra, Combinatorics and Geometry Seminar, University of Pittsburgh:

- *The Jones Polynomial and the Kauffman Bracket*
- *Category Theory V (Representable Functors)*
- *Category Theory IV (Limits Informally/Formally)*
- *Category Theory III (Slice and Comma Categories)*
- *Category Theory II (Products and Limits)*

Senior Thesis Defense, Haverford College: *Results in sphere packing density*. May 2007

AWARDS

University of Pittsburgh Honors Convocation 2013, 2014

Outstanding Presentation: Graduate Expo 2013

University of Pittsburgh Irvis Fellowship 2009, 2012

Bronze Presidential Service Award for AmeriCorps Volunteer Service 2008

TEACHING EXPERIENCE

Graz University of Technology, Graz, AT

Lehrbeauftragter October 2014-January 2015, March-June 2016

Instructor for MAT.670: Packings, Lattices and Configurations
Summer 2016

Assistant for MAT.902: Höhere Analysis
Winter 2014 (1 section)

University of Pittsburgh, Pittsburgh, PA USA

Teaching Fellow September 2010 - December 2011

Assistant for Math 0220: Calculus I
Fall 2011 (3 sections)

Assistant for Math 1700: Topology
Spring 2011

Assistant for Math 1410: Foundations of Mathematics
Spring 2011

Assistant for Math 1250: Abstract Algebra 2
Spring 2011

Assistant for Math 0230: Calculus 2
Fall 2010

Assistant for Math 0220: Calculus 1
Fall 2010 (2 sections)

Teaching Assistant September 2009 - August 2010

Instructor for Math 0120: Business Calculus
Summer 2010
Responsible for lectures and course material

Assistant for Math 0120: Business Calculus
Spring 2010 (3 sections)

Assistant for Math 0240: Calculus 3
Fall 2009 (3 sections)

Sample material and student evaluations available upon request

PROFESSIONAL EXPERIENCE

Representative: Dietrich School of Arts and Sciences Council, 2012 - 2014

Delegate: Arts and Sciences Graduate Student Organization, 2011 - 2014

President: Mathematics Graduate Student Organization, 2013 - 2014

Treasurer: Mathematics Graduate Student Organization, 2011 - 2013

Treasurer: SIAM University of Pittsburgh Chapter, 2010 - 2011

Organizer: Graduate Seminar in Algebra, Combinatorics and Geometry, 2010 - 2011

TECHNICAL SKILLS

T_EX (L^AT_EX, B_IB_TE_X), Mathematica.

REFERENCES

Please contact me for references.