

## Wöden B. Kusner

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CONTACT INFORMATION	<b>Institute for Analysis and Number Theory</b> <b>Graz University of Technology</b> Steyrergasse 30/II 8010 Graz, AUSTRIA	☎ +43 650 743 8431 ☎ 1 413 225 1323 ✉ <a href="mailto:wkusner@gmail.com">wkusner@gmail.com</a>
CITIZENSHIP	USA	
RESEARCH INTERESTS	Discrete and Metric Geometry, Topological and Geometric Frustration, Emergent Phenomena, Geometric Analysis, Geometric Measure Theory, Integral Geometry, Representation Theory	
EDUCATION	<b>University of Pittsburgh</b> , Pittsburgh, PA USA  Ph.D., Mathematics, August 2014 Advisor: <b>Professor Thomas C. Hales</b> Dissertation: <i>Bounds on packing density via slicing</i>  M.A., Mathematics, August 2010  <b>Haverford College</b> , Haverford, PA USA  B.S., Mathematics, May 2007 Advisor: Professor John J. Flynn Thesis: <i>Results in sphere packing density</i>	
ACADEMIC APPOINTMENTS	<b>Postdoctoral Researcher</b> <b>Institute for Analysis and Number Theory</b> <b>Graz University of Technology</b>	September 2014 to present
PAPERS	Wöden Kusner. An upper bound on packing density for circular cylinders of high aspect ratio. <i>Discrete Comput. Geom.</i> <b>52</b> (4):964-972, 2014. <a href="http://arxiv.org/abs/1309.6996">http://arxiv.org/abs/1309.6996</a>  Wöden Kusner. On the densest packing of polycylinders in any dimension. <i>ArXiv preprint</i> : <a href="http://arxiv.org/abs/1405.0497">http://arxiv.org/abs/1405.0497</a>  Yoav Kallus and Wöden Kusner. The local optimality of the double lattice packing. <i>ArXiv preprint</i> : <a href="http://arxiv.org/abs/1509.02241">http://arxiv.org/abs/1509.02241</a>	
TALKS AND CONFERENCES	ICERM Research Seminar, Brown University. <i>Can rods pack space more densely than disks pack in the plane?</i> April 28th, 2015.  ICERM Postdoc and Graduate Student Seminar, Brown University. <i>Spherical discrepancy</i> . April 9, 2015.  Visitor, Brown University – ICERM: Phase Transitions and Emergent Properties. February-May 2015.  Working Problems Session, TU Graz: <i>Computing spherical cap discrepancy: proof of concept</i> . January 22, 2015.  Guest Lecture, TU Graz: <i>Introduction to packing problems</i> . 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.

Visitor, University of Vienna – ESI: Minimal Energy Point Sets. October 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 to January 2015  
Assistant for MAT.902: Höhere Analysis  
Winter 2014 (1 section)

**University of Pittsburgh**, Pittsburgh, PA USA

*Teaching Fellow* September 2010 to 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 to 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<sub>E</sub>X (L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>), Mathematica.