

Scott R. Kaschner

CONTACT INFORMATION	Department of Mathematics The University of Arizona 617 N. Santa Rita Ave. Tucson, AZ 85721-0089 USA	<i>Mobile:</i> 330-465-5929 <i>Office:</i> 520-621-3832 <i>E-mail:</i> skaschner@math.arizona.edu <i>Web:</i> www.math.arizona.edu/~skaschner
EDUCATION	Purdue University , West Lafayette, IN USA Ph.D., Purdue University, Mathematics, May 2013 <ul style="list-style-type: none">• Thesis Topic: <i>Super-stable Manifolds in Rational Mappings of $\mathbb{C}\mathbb{P}^n$</i>• Adviser: Professor Roland Roeder The University of Akron , Akron, OH USA M.S., The University of Akron, Theoretical Mathematics, May 2008 <ul style="list-style-type: none">• Thesis Topic: <i>Bifurcation with a Two-Dimensional Kernel</i>• Adviser: Professor J. Pat Wilber B.S., The University of Akron, Theoretical Mathematics, May 2003 <ul style="list-style-type: none">• Minor in Psychology	
ACADEMIC APPOINTMENTS	The University of Arizona , Department of Mathematics Tucson, AZ USA <i>Teaching Postdoc</i>	August 2013 to present
	Indiana University Purdue University Indianapolis , Dept. of Mathematical Sciences <i>Graduate Teaching Assistant</i>	May 2010 to August 2011
	The University of Akron , Department of Mathematics <i>Graduate Teaching Assistant</i>	September 2007 to May 2008
FELLOWSHIPS AND AWARDS	National Science Foundation <ul style="list-style-type: none">• GK-12 Fellowship, 2012–2013 U.S. Department of Education <ul style="list-style-type: none">• GAANN Fellowship, 2009–2012 Indiana University Purdue University Indianapolis <ul style="list-style-type: none">• Purdue School of Science Fellowship, 2008–2009• Student Athlete Award, 2009 and 2011	
PUBLICATIONS	<i>Superstable manifolds of invariant circles and co-dimension 1 Bottcher functions</i> (with R. Roeder), <i>Ergodic Theory and Dynamical Systems</i> : (2012), 1-24.	
SUBMITTED FOR PUBLICATION	<i>Rational Maps of $\mathbb{C}\mathbb{P}^2$ with No Invariant Foliation</i> (with R. Perez and R. Roeder), <i>Bulletin de la Société Mathématique de France</i> . Submitted September 2014. <i>Geometric Limits of Julia Sets with Parameters on the Circle</i> (with R. Romero and D. Simmons), <i>International Journal of Bifurcation and Chaos</i> . Submitted November 2014.	
IN PREPARATION	<i>Active Reading Intervention in Upper Division Undergraduate Mathematics</i> <i>Symmetrization in \mathbb{P}^k</i> (with B. Hutz and T. Gauthier) <i>Hierarchical Lattices for The Ising Model</i> (with Matthew Campbell)	
UNDERGRADUATE RESEARCH PROJECTS	<i>Geometric Limits of Julia Sets for Unicritical Complex Polynomials</i> , with Reaper Romero and David Simmons. Summer 2014. Studied the limits of Julia sets with respect to the degree of the maps of the form $z \mapsto z^n + c$. Solved open case for almost all parameters on the circle. <i>Hierarchical Lattices for The Ising Model</i> , with Matthew Campbell. Fall 2014. Generalized results for the Ising Model for magnetization with diamond hierarchical lattice.	

TEACHING
EXPERIENCE

University of Arizona, Tucson, AZ

Center for Recruitment and Retention of Mathematics Teachers

November 2014

- Instructor for Teacher Workshop Series:
Connecting Geometry and Algebra Using Conic Sections and Quadric Surfaces

Teaching Postdoc

August 2013 to present

- Math 425b/525b: Real Analysis of Several Variables, Spring 2015
- Math 129: Calculus II, 2 sect., Spring 2015
- Math 425/525: Real Analysis of One Variable, Fall 2014
- Math 263: Introduction Statistics and Biostatistics, Fall 2014
- Math 254: Introduction to Ordinary Differential Equations, Summer 2014
- Math 355: Analysis of Ordinary Differential Equations, Spring 2014
- Math 215: Introduction to Linear Algebra, Summer 2014, 2 sect., Spring 2014
- Math 120R: Calculus Preparation, Fall 2013
- Math 122B: First Semester Calculus, Fall 2013
- Math 196L: Supplemental Instruction for Precalculus, Fall 2013

Indiana University Purdue University Indianapolis, Indianapolis, IN

Instructor

September 2009 to August 2013

- Math 231: Calculus for Life Sciences, Summer 2011
- Math M118: Finite Mathematics, Spring 2011 and Spring 2010
- Math M119: Calculus with Business Application, Fall 2010
- Math 171: Multidimensional Mathematics, Summer 2010, Summer 2013

University of Akron, Akron, OH

Instructor

September 2007 to May 2008

- College Algebra, Fall 2007
- Intermediate Algebra, Spring 2008

CONFERENCE
ORGANIZATION

Special Session on Complex Dynamics (with Holly Kreiger and Paul Reschke)
2014 Joint Mathematics Meeting, Baltimore, Maryland January 15–18, 2014.

INVITED
CONFERENCE
PRESENTATION

Superstable Manifolds of Invariant Circles
*Special Session on Hyperbolic Dynamics, Dynamically Defined Fractals, and Applications:
AMS Western Spring Sectional Meeting, Albuquerque, NM April 4-6, 2014.*

Spheres, Planes, and Topography Pains
Mathematics Educator's Appreciation Day Conference, Tucson, AZ January 25, 2014.

Regularity of Superstable Manifolds
47th Spring Topology and Dynamics Conference, New Britain, CT March 23–25, 2013.

Regularity of Superstable Manifolds
2013 Joint Mathematics Meeting, San Diego, CA January 9–12, 2013.

Non-analyticity of the Low Temp. Stable Manifold for the Migdal-Kadanoff Renormalization
*Interactions Between Continuous and Discrete Holomorphic Dynamical Systems, Banff International
Research Station, Alberta, Canada July 9–13, 2012.*

Non-analyticity of the Low Temp. Stable Manifold for the Migdal-Kadanoff Renormalization
Workshop in Holomorphic Dynamics, Roskilde, Denmark October 1–3, 2011.

CONTRIBUTED
LECTURES AND
POSTERS

- More Bang From Your Book: A Simple Strategy to Promote Active Reading
MAA Mathfest, Portland, OR August 9, 2014.
- Rational Map of \mathbb{CP}^2 with No Invariant Foliation (Poster)
Midwest Dynamical Systems Conference, Champaign/Urbana, IL November 1–3, 2013.
- Dynamical Systems in the 6th Grade Science Classroom
2013 Joint Mathematics Meeting, San Diego, California January 9–12, 2013.
- Superstable Manifolds of Invariant Circles (Poster)
Midwest Dynamical Systems Conference, South Bend, IN October 26–28, 2012.
- The Logistic Map and Chaos
MAA Mathfest, Madison, WI August 1–4, 2012.
- The Mandelbrot Set and Connectivity
MAA Mathfest, Lexington, KY September 12–15, 2011.

CONFERENCE AND
WORKSHOP
PARTICIPATION

- International Congress of Mathematicians Satellite Conference: Holomorphic Dynamics in One and Several Variables*, Gyeongju, Korea, October 23–26, 2014.
- American Institute of Mathematics Workshop: Postcritically Finite Maps in Complex and Arithmetic Dynamics*, Palo Alto, CA, March 2014
- AMS Mathematics Research Community: Complex Dynamics*
Snowbird, UT, June 2013
- Advanced School and Workshop in Real and Complex Dynamics* Abdus Salam International Centre for Theoretical Physics, Trieste, Italy, June 2013

SELECTED
SEMINAR AND
COLLOQUIA

- University of Oklahoma** Mathematics Department Colloquium
Dynamical Degree and Invariant Foliations, 11/13/14
- MSDWT Allisonville Elementary School**
Research Mathematics, Graduate School, and Dynamical Systems, 3/15/13
- Butler University** Operator Theory Seminar
Co-dimension 1 Böttcher Functions, 2/27/13, 3/6/13, 3/27/13
- University of Illinois at Chicago** Analysis Seminar
Superstable Manifolds of Invariant Circles, 4/1/13
- Syracuse University**
Non-analytic Superstable Manifolds of Invariant Circles, 11/2/12
- University of Illinois at Urbana-Champaign**
Super-stable Manifolds of Invariant Circles, 10/15/12
- University of Arizona**, *Mathematics Instruction Colloquium*
More Bang From Your Book: A Simple Strategy to Promote Active Reading, 5/6/14
- University of Arizona**, *Analysis, Application, and Dynamics Seminar*
Rational Maps of \mathbb{CP}^2 with Equal Degrees and No Invariant Foliation, 2/4/14
- University of Arizona**, *Undergraduate Brown Bag Seminar*
Crash Course in Dynamics of One Complex Variable, 9/26/13
- IUPUI**, *Dynamical Systems Seminar*
Non-analytic Superstable Manifolds of Invariant Circles, 9/14/12, 10/12/12
Analytic Superstable Manifolds of Invariant Circles, 8/31/12, 9/7/12
Non-analyticity of Stable Manifolds for Lee Yang Maps, 9/12/11
The Böttcher Function for Migdall-Kadanoff Renormalization, 9/5/11
Regularity of Stable Manifolds for Polynomial Maps of \mathbb{C}^2 , 5/5/11

ADVISING AND
MENTORING

University of Arizona Department of Mathematics,
faculty mentor to Teaching Postdoctoral Fellow, Katherine Walsh

University of Arizona Undergraduate Teaching Assistant Program,
mentor to Alexis-Jane Torre in Introduction to Linear Algebra (Spring 2014)
mentor to Riakong Granzier in Introduction Statistics and Biostatistics (Fall 2014).

University of Arizona Graduate Teaching Assistant Program,
supervisor to Whitney Beard in Introduction to Linear Algebra (Fall 2014)
mentor to Logan Gantner in Real Analysis of One Variable (Fall 2014)
mentor to Will Lippitt in Supplemental Instruction for Precalculus (Fall 2013).

EXTERNAL
FUNDING AWARDS

AMS JMM 2013 Travel Grant, \$500 for travel to 2013 JMM.

SOSGSC Travel Grant, \$800 for conference presentation at Banff International Research Station in Alberta, Canada in 2012.

Ohio Board of Regents, \$340,000 for Summer STEM Academy, implemented through the Northeast Ohio Center for Excellence in Mathematics and Science Teacher Education at the University of Akron, 2007. Assistant to PI.

EXTERNAL
FUNDING,
AWAITING
DECISION

NSF Improving Undergraduate STEM Education (IUSE: EHR), \$250,000 Engaged Student Learning Exploration Grant for Mathematics Ambassadors Program.

American Institute of Mathematics SQuaREs, Funding for research group on “Bifurcation Resonance and Quadratic Rational Maps.”

Spencer Foundation, Grant to develop and implement an on-line upper-division Real Analysis course at the University of Arizona.

Center for Undergraduate Research in Mathematics, \$10,000 grant for undergraduate research project in complex analysis.

TRAINING AND
PROFESSIONAL
DEVELOPMENT

Intel Math Program, Professional Development Workshop Instructor Training, University of Arizona, Summer 2014

Project Aspire, Assessment Training, Arizona State University, Spring 2014

University of Arizona Mathematics Instruction Colloquium, August 2013-present.

MAA Mathfest Workshop, What’s the Story? Formulating a Research Presentation for a General Audience, Lexington, KY, August 2011 and Madison, WI, August 2012

IUPUI Math and Teaching Seminar, IUPUI, Spring of 2010 and 2011.

Collaborative Institutional Training Initiative, Internal Review Board Certification Training, Spring 2014 and Fall 2012

PROFESSIONAL
EXPERIENCE/
DEPARTMENTAL
SERVICE

Illustrative Mathematics, Tucson, AZ USA

Item writer for College Board PSAT and SAT

November to Present

University of Arizona Department of Mathematics, Tucson, AZ USA

Undergraduate Committee

August 2014 to Present

Undergraduate Teaching Assistant Program

January 2014 to Present

IUPUI School of Science Graduate Student Council, Indianapolis, IN USA

Council President

August 2012 to August 2013

Mathematics Department Representative

August 2010 to August 2012

IUPUI School of Science Strategic Planning Committee, Indianapolis, IN USA

Graduate student representative

February 2013 to June 2013

Northeast Ohio Center for Excellence in Mathematics and Science Teacher Education, Akron, OH USA

Assistant to the Director

August 2006 to August 2007