

Russell Lodge

Department of Mathematics and Computer Science
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EMPLOYMENT

<i>Assistant professor</i> , Indiana State University, Terre Haute, Indiana	2018-
<i>Milnor lecturer</i> , Institute for Mathematical Sciences, Stony Brook University	2016-2018
<i>Postdoctoral fellow</i> , Jacobs University, Bremen, Germany	2012-2016

EDUCATION

<i>PhD Mathematics</i> , Indiana University Bloomington (adviser: Kevin Pilgrim)	2005-2012
<i>BS Mathematics</i> , Grove City College, computer science minor	2001-2005

RESEARCH INTERESTS

Holomorphic dynamics (especially combinatorial aspects), Teichmüller space, self-similar groups

PUBLICATIONS

- *Iterated monodromy groups of rational functions and periodic points over finite fields* with A. Bridy, R. Jones, and G. Kelsey, *In preparation*.
- *On dynamical gaskets generated by rational maps, Kleinian groups, and Schwarz reflections* with M. Lyubich, S. Merenkov, S. Mukherjee, *Preprint*, [arXiv:1912.13438](https://arxiv.org/abs/1912.13438).
- *Puzzles and the Fatou-Shishikura injection for rational Newton maps* with K. Drach, D. Schleicher, and M. Sowiński, *Submitted*, [arXiv:1805.10746](https://arxiv.org/abs/1805.10746).
- *Invisible tricorns in real slices of rational maps* with S. Mukherjee, *Submitted*, [arXiv:1710.05071](https://arxiv.org/abs/1710.05071), 48 pages.
- *Quadratic Thurston maps with few postcritical points* with G. Kelsey, *Geom Dedicata* (2019) 201:33, <https://doi.org/10.1007/s10711-018-0387-5>.
- *Origami, affine maps, and complex dynamics* with W. Floyd, G. Kelsey, S. Koch, W. Parry, K. Pilgrim, and E. A. Saenz, *Arnold Mathematical Journal*, 3(3) (2017), 365-395.
- *A classification of postcritically finite Newton maps* with Y. Mikulich and D. Schleicher, *Submitted*, [arXiv:1510.02771](https://arxiv.org/abs/1510.02771), 24 pages.
- *Combinatorial properties of Newton maps* with Y. Mikulich and D. Schleicher, *Submitted*, [arXiv:1510.02761](https://arxiv.org/abs/1510.02761), 33 pages.
- *Boundary values of the Thurston pullback map* *Conform. Geom. Dyn.*, 17 (2013), 77-118.

MINICOURSES

Combinatorics in holomorphic dynamics (10 lecture hours), National Center for Theoretical Sciences, Taipei, Taiwan, July 2019

Iterated monodromy groups (3 lectures), Workshop on holomorphic dynamics, Holbaek, Denmark, November 2017

A positive characterization of rational maps (3 lectures), Learning seminar, Stony Brook University, March-April 2017

Thurston's pullback map (4 lectures), Teichmüller theory seminar, Indiana University Bloomington, May-June 2010

INVITED TALKS

Workshop on dynamical systems, NCTS, Taipei, Taiwan, May 2020
Colloquium, National University of Kaohsiung, Taiwan, June 2019
Workshop on dynamical systems, NCTS, Taipei, Taiwan, May 2019
Dynamics seminar, Indiana University Purdue University Indianapolis, March 2019
Colloquium, Indiana State University, March 2018
Colloquium, University of Rhode Island, January 2018
Colloquium, Jacobs University Bremen, Germany, November 2017
Braids and rational maps, Harvard University, August 2017
Special session on discrete structures in conformal dynamics and geometry, AMS sectional meeting, Indiana University, Bloomington, April 2017
Geometry and dynamics seminar, Harvard University, March 2017
Fractals in geometry and dynamics, CUNY Graduate Center, Jan 2017
Dynamics seminar, University of Rhode Island, Nov 2016
Capsule research talk, Stony Brook University, NY, Sept 2016
Complex analysis, dynamics and geometry seminar, University of Michigan, Ann Arbor, Nov 2015
Teichmüller theory seminar, Indiana University, Bloomington, Nov 2015
Dynamical systems seminar, Boston University, Nov 2015
Geometry and topology seminar, University of Warwick, Coventry, England, Nov 2015
Dynamical Developments, in honor of the 70th birthday of John H. Hubbard (software presentation, young people's seminar), Bremen, Germany, August 2015
Joint Math Meetings, special session on holomorphic dynamics in one and several variables, San Antonio, TX January 2015
Bremen Winter School, Kleinian groups and transcendental dynamics, Germany, April 2014
Topological and combinatorial problems in one-dimensional complex dynamics, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy, Oct 2013
AIM SQuaRE, The global dynamics of Thurston's pullback map, Palo Alto, CA July 2013
Topics in complex dynamics, IMUB-UB Barcelona, Spain, June 2013
Groups and dynamics seminar, Georg-August-Universität Göttingen, Germany, April 2013
AMS sectional meeting, special session on Geometric Topology and Group Theory, Lawrence, KS, March 2012
Workshop on polynomial mappings, Institut de Mathématiques de Toulouse, June 2011
Workshop on trends in complex dynamics, Clay Math Institute, May 2011

OTHER CONFERENCE ACTIVITY

Software demonstration: Hot topics workshop: Algorithms in Complex Dynamics and Mapping class Groups, ICERM, Providence, RI, Nov 2019
Poster presentation: Midwest dynamical systems early career conference, The Ohio State University, Columbus, May 2019
Geometry, groups and dynamics, Rose Hulman University, Terre Haute, IN, October 2018

Contributed paper: Joint Mathematics Meetings, San Diego, CA, January 2018

AIM SQuaRE, The global dynamics of Thurston's pullback map, Palo Alto, CA July 2013, August 2014, June 2015

The role of complex analysis in complex dynamics, Edinburgh, UK, May 2013

Workshop on holomorphic dynamics, Holbaek, Denmark, September 2012

Poster presentation: Workshop on moduli spaces associated to dynamical systems, ICERM, Providence, RI, April 2012

Joint Mathematics Meetings, Boston MA, January 2012

Bloomington geometry workshop, Bloomington IN, March 2011

AMS spring central sectional meeting, Urbana IL, March 2009

Graduate students topology conference, Urbana IL, March 2008

HONORS AND AWARDS

Visiting Professorship, National Center for Theoretical Sciences, Taipei, Taiwan, May-July 2019, 2020

Participant, AIM SQuaRE The global dynamics of Thurston's pullback map, Palo Alto, CA, 2013-2015

Rothrock Teaching Award, Indiana University mathematics department, 2010

Glenn Schober Memorial Travel Award, Indiana University mathematics department, 2010, 2011

TEACHING

Graduate

- Complex analysis 1
- Analysis 1

Undergraduate (for majors)

- Complex analysis 1
- Analysis 1
- Elementary analysis
- Modern geometry
- Linear algebra
- Introduction to mathematical reasoning
- Perspectives of mathematics
- Math for elementary teachers 1,2
- Seminar

Undergraduate (service courses)

- Calculus 1,2,3
- Engineering math (Linear algebra, Fourier, probability)
- Finite mathematics
- Precalculus
- Trigonometry
- Basic algebra
- Conversational English

PROFESSIONAL DEVELOPMENT

Online Instructor Certificate Course, Indiana State University, Spring 2019

MACS teaching seminar, Indiana State University, Fall 2018, Spring 2019

Joint Math Meeting minicourse by P. Blanchard and R. Devaney *A dynamical systems approach to the differential equations course*, January 2012

DEPARTMENTAL SERVICE

Putnam exam organizer, Math and CS department (Dec 2019)

General audience talk, Math and CS department (Dec 2018)

Graduate advising, Math and CS department (Fall 2018-)

Graduate Committee, Math and CS department (Fall 2018-)

Webpage development, Math and CS department (Fall 2018-)

Mathematics Curriculum Committee, Math and CS department (Fall 2018-)

EXTERNAL SERVICE

Conference organizer, 2020 NCTS workshop in dynamical systems, Taipei, Taiwan (May 2020)

Webpage development, dynamics group, Jacobs University Bremen

Local organizer, Dynamical Developments: a conference in Complex Dynamics and Teichmüller theory, in honor of the 70th birthday of John H. Hubbard, Jacobs University (August 2015)

Speaker, Summer camp: Mathematics for pre-college students, Jacobs University (July 2015)

Organizer, Geometry and dynamics seminar, Jacobs University (Fall 2013-Spring 2016)

Discussion session leader, International summer school for students, Bremen, Germany (July 2013)

Organizer and instructor, conversational English class for Mandarin speakers, Bloomington, IN (Sept 2008-May 2010)

Visiting lecturer, English conversation department, mathematics department, Yanbian University of Science and Technology, China (Spring, Summer 2005)

REFERENCES

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