

LUKE WILLIAMS

Department of Mathematics
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RESEARCH INTERESTS Low-dimensional topology: smooth 4-manifolds, handlebody theory, Stein domains, symplectic and contact geometry, exotic structures, knot theory, Dehn surgery.

EDUCATION **Michigan State University**, East Lansing, MI
Ph.D., Mathematics, *expected* May, 2015
Advisor: Selman Akbulut

University of Nevada, Reno, Reno, NV
M.S., Mathematics, May, 2008
Advisor: Stanislav Jabuka
Thesis: Obstructing Sliceness in a Family of Montesinos Knots

B.S., Mathematics, with High Distinction May, 2006
Minor: Geology

PREPRINTS *On Handlebody Structures of Rational Balls*, arXiv e-prints (2014), 1406.1575.
Obstructing Sliceness in a Family of Montesinos Knots, arXiv e-prints (2008), 0809.1247.

AWARDS & HONORS **Dissertation Completion Fellowship** Spring 2015
College of Natural Science, Michigan State University

Award for Excellence in Teaching Spring 2013
Senior Graduate Teaching Assistant
Department of Mathematics, Michigan State University

Award for Excellence in Teaching Spring 2010
Junior Graduate Teaching Assistant - Honorable Mention
Department of Mathematics - Michigan State University

Summer Support Fellowship Summer 2008
College of Natural Science, Michigan State University

Excellence in Scholarship Award Spring 2008
Department of Mathematics and Statistics, University of Nevada, Reno

Jerry and Betty Wilson Scholarship 2006-2007, & 2007-2008
Department of Mathematics and Statistics, University of Nevada, Reno

Millennium Scholarship 2001-2006
State of Nevada

INVITED TALKS	On Handlebody Structures of Rational Balls	
	University of Pennsylvania <i>Geometry-Topology Seminar</i>	November 20, 2014
	University of Texas, Austin <i>Topology Seminar</i>	October 6, 2014
	Simons Center for Geometry and Physics <i>Graduate Workshop on 4-Manifolds</i>	August 22, 2014
	Stein Structures on Contractible 4-Manifolds	
	2013 Joint Mathematics Meetings <i>AMS Special Session on Knots, Links, and Three-manifolds</i>	January 12, 2013
WORKSHOPS & CONFERENCES ATTENDED	Workshop on 4-Manifolds	August 18-22, 2014
	Simons Center for Geometry and Physics, Stony Brook, NY	
	Third Annual Tech Topology Conference	December 6-8, 2013
	Georgia Institute of Technology, Atlanta, GA	
	Workshop and Conference on the Topology and Invariants of Smooth 4-Manifolds	July 31 - August 10, 2013
	University of Minnesota, Minneapolis, MN	
	2013 Joint Mathematics Meetings	January 9-12, 2013
	San Diego Convention Center, San Diego, CA	
	Midwest Topology Seminar	October 27-28, 2012
Michigan State University, East Lansing, MI		
Workshop and Conference on Holomorphic Curves and Low Dimensional Topology	July 30 - August 11, 2012	
Stanford University, Palo Alto, CA		
Ninth Annual Graduate Student Topology and Geometry Conference	April 2-3, 2011	
Michigan State University, East Lansing, MI		
Eleventh Chico Topology Conference and Fortieth Cascade Topology Seminar	May 9-11, 2008	
Chico State University, Chico, CA		
TEACHING EXPERIENCE	Michigan State University	
	Elementary Mathematics for Teachers II	Fall 2014
	<i>Instructor of Record</i>	
	Calculus I	Fall 2013, Spring 2014
<i>Instructor of Record</i>		
Honors Linear Algebra	Spring 2013	
<i>Recitation Leader</i>		

Geometry and Topology I Fall 2012
Teaching Assistant

Survey of Calculus I Fall 2010, Spring 2011, Summer 2011
Instructor of Record Spring 2009, Fall 2009, Spring 2010, Summer 2010

Intermediate Algebra Summer 2009
Instructor of Record

College Algebra Fall 2008
Instructor of Record

University of Nevada, Reno

Calculus II Spring 2007, Spring 2008
Recitation Leader

Precalculus II Fall 2007
Instructor of Record

Precalculus I Fall 2006
Instructor of Record

TEACHING RELATED EXPERIENCE

Michigan State University

Lead Teaching Assistant for Summer Session Summer 2014
Supervisor Summer 2012, Summer 2013

Coordinated thirty graduate teaching assistants each summer.
 Oversaw ten distinct lower-division math courses per term.
 Ensured syllabi conformed to department standards.
 Reviewed assessment materials (including final exams) for content, coverage.
 Resolved student grade and course concerns.

Mathematics Learning Center - Supervisor Fall 2010, Spring 2011

Managed needs of the tutoring center.
 Provided additional tutoring support as needed.
 Evaluated tutors and helped them improve.

Mathematics Learning Center - Exam Reviews Spring 2010

Gave two-hour review sessions for Survey of Calculus I exams to between 350 and 700 students.

DEPARTMENTAL & SUBMITTED TALKS

On Handlebody Structures of Rational Balls

Michigan State University September 22, 2014
Topology Seminar

Gompf, Scharlemann, and Thompson's "On the Generalized Property R and Slice-Ribbon Conjectures"

Michigan State University October 19, 2011
Topology Seminar

Obstructing Sliceness in a Family of Montesinos Knots

Michigan State University February 18, 2009
3- & 4- Manifolds Seminar

Chico State University May 10, 2008
Eleventh Chico Topology Conference & Fortieth Cascade Topology Seminar

Graduate Geometry / Topology Seminars - Michigan State University

“Exotic \mathbb{R}^4 ’s” November 26, 2013.
 “The h -principle” March 13, 2013.
 “Principal Bundles” November 1, 2012.
 “Generalized nuclei and exotic structures” February 16, 2012.
 “Handlebodies and the Andrews-Curtis conjecture” November 1, 2011.
 “On the Heegaard Floer homology of plumbed 3-manifolds” April 7, 2011.
 “Some basics of symplectic topology and Kähler manifolds” October 28, 2010.
 “Knot colorability and knot groups” March 19, 2010.
 “Branched Covers” October 29, 2009.
 “Obstructing Sliceness in a Family of Montesinos Knots” February 13, 2009.

**PROFESSIONAL
MEMBERSHIP**

American Mathematical Society

2008 - present