

Education

- **University of California at Irvine**, Ph.D. in Mathematics, 2006
Thesis: Exotic smooth structures on 4-manifolds with small Euler characteristic
Advisor: Ronald J. Stern.
- **Princeton University**, Visiting graduate student, Fall 2003 - Spring 2004.
- **University of California at Berkeley**, Visiting graduate student, Fall 2001.
- **California State University, Fresno**, B.A. in Mathematics, 2000.

Research Interests

- Low-Dimensional Topology, Symplectic and Contact Topology, Gauge Theory, Algebraic Geometry.
- **Particular interests:** Classification Problems for Smooth and Symplectic 4-Manifolds, Exotic Smooth Structures on Small 4-Manifolds, Stein Fillings of Contact 3-Manifolds, Heegaard Floer Homology, Geography of Complex Surfaces, Arithmetic of Elliptic Curves.

Employment

- **University of Minnesota:** Assistant Professor, Fall 2009 - current
- **Columbia University:** Ritt Assistant Professor, Fall 2008 - Spring 2009 (three year offer).
- **University of Zürich:** Visiting Assistant Professor, Spring - Summer 2008.
- **Georgia Institute of Technology:** Visiting Assistant Professor, Fall 2006 - Spring 2008 (two year position).

Publications, Preprints

1. *Exotic Smooth Structures on 4-Manifolds with Zero Signature*, with B. D. Park, preprint.
2. *Exotic Smooth Structures on $S^2 \times S^2$* , with B. D. Park, preprint.
3. *Geography of Symplectic 4-manifolds with Positive Signature*, with M. Hughes, and B. D. Park, submitted.
4. *Spin Symplectic 4-Manifolds near Bogomolov-Miyaoka-Yau Line*, with B. D. Park, and G. Urzua, *Gökova Journal of Geometry and Topology*, 4 (2010), 55-66.
5. *Geography of Simply Connected Spin Symplectic 4-Manifolds*, with B. D. Park, *Math. Res. Letters*, 17 (2010), no. 3, 483-492.
6. *Exotic Smooth Structures on Small 4-Manifolds with Odd Signatures*, with B. D. Park, *Invent. Math.*, 181 (3), 577-603, 2010.
7. *Simply Connected Minimal Symplectic 4-Manifolds with Signature Less than -1*, with S. Baldridge, I. Baykur, P. Kirk, and B. D. Park, *Journal of European Math Soc.*, 1 (2010), 133-161.

8. *A Note on Stein Fillings of Contact Manifolds*, with J. Etnyre, T. Mark, and I. Smith, *Math. Res. Letters*, 15 (2008), no. 6, 127-133.
9. *New Symplectic 4-Manifolds with Nonnegative Signature*, with B. D. Park, Gökova *Journal of Geometry and Topology*, 2 (2008), 1-13.
10. *Constructing Infinitely Many Smooth Structures on Small 4-Manifolds*, with I. Baykur, and B. D. Park, *Journal of Topology*, 1(2), 409-428, 2008.
11. *Exotic Manifolds with Small Euler Characteristic*, with B. D. Park, *Invent. Math.*, 173 (1), 209-223, 2008.
12. *Small Exotic 4-Manifolds*, *Algebraic and Geometric Topology*, no. 8, 2008, 1781-1794.
13. *Construction of New Symplectic Cohomology $S^2 \times S^2$* , *Gökova Geometry and Topology*, 11 (2007), no. 14, 36-48.
14. *Construction of Exotic Smooth Structures*, *Topology and Applications* 154 (6), 2007, 1134-1140.
15. *Surface Bundles with Non-Zero Signature*, *Topology and Applications*, 154 (11), 2007, 2235-2240.

Awards and Distinctions

- NSF Focused Research Group Grant, "The topology and invariants of smooth 4-manifolds", (individual portion of the award: \$143,942), 2011-14, (Co-PI with S. Akbulut, W. Chen, Y. Eliashberg, T-J. Li, D. Ruberman, and N. Saveliev).
- NSF Research Award (\$134,393), DMS-1005741, 2010-13.
- William Hodge Fellowship, IHES, 2008 (declined).
- James Simons Instructorship, SUNY at Stony Brook, 2008 (declined).
- Research Fellowship, 2003-2006.
- UC Irvine Graduate Fellowship 2000-2003.
- International Mathematical Olympiad: bronze medal, 1993.
- Azerbaijan National Mathematical Olympiad: 1st place 1993.
- "Quantum" Mathematical Contest of Russian Academy of Science for high school students in former USSR: winner 1992-94.

Teaching

University of Minnesota

- *Math 8301, Manifolds and Topology*, Fall 2011.
- *Math 8307, Algebraic Topology*, Spring 2011.
- *Math 4991, Independent Study*, Spring 2011.
- *Math 4997W, Senior Project*, Spring 2011.
- *Math 8306, Algebraic Topology*, Fall 2010.

- *Math 4707, Introduction to Combinatorics and Graph Theory*, Spring 2010.
- *Math 2263, Multivariable Calculus*, Fall 2009.

**Seminar and
Conference
Organization**

- *Organizer, Differential Geometry and Symplectic Topology Seminar*, UMN, 2009–2011.
- *Co-Organizer, Yamabe Symposium on “Geometry and Topology”*, UMN, September 2010.

Committees

- *Undergraduate Program Committee*, UMN, 2010–2011.
- *PhD Writtens Committee*, UMN, 2010–2011.
- *Yamabe Symposium Committee*, UMN, 2010.

**Graduate
Students**

- *Defense Committee*, UMN, 2010–2011.
Chung-I Ho, (PhD expected May 2011, University of Minnesota)
- *Oral Exam Committee*, UMN, 2010–2011.
2010: Haojie Chen
2011: Xu Wang, Ching-Hao Chang

**Undergraduate
Students**

- *Senior Project Adviser*
Jun Park, Spring 2011, Monodromy Substitutions and Exotic Smooth Structures on 4-Manifolds.
- *Putnam and North Central Exam Preparation*, Fall 2010.

Referee

Manuscripta Mathematica, Pacific Journal of Mathematics.

Invited Talks

- *Geometry and Topology Seminar*, University of Waterloo, Canada, April 2011.
- *Topology Seminar*, Michigan State University, East Lansing, April 2011.
- *Geometry Seminar*, University of Vienna, Vienna, Austria, August 2010.
- *ICM Satellite Conference: Geometric Topology and Riemannian Geometry*, Indian Institute of Science, Bangalore, India, August 2010 (Declined invitation due to a family emergency).
- *Gökova Geometry/Topology Conference*, Gökova, Turkey, May 2010.
- *Topology Seminar*, Brandeis University, Waltham, April 2010.
- *Differential Geometry and Symplectic Topology Seminar*, University of Minnesota, Minneapolis, March 2010.

- *Differential Geometry and Symplectic Topology Seminar*, University of Minnesota, Minneapolis, October 2009 (2 talks).
- *Geometry Seminar*, Purdue University, Lafayette, November 2008.
- *Topology Seminar*, Columbia University, New York, October 2008.
- *Algebraic Geometry Seminar*, University of Zürich, Switzerland, May 2008.
- *Holomorphic Curves: Algebraic Structures and Geometric Application*, Stanford University, Palo Alto, August 2008.
- *Gökova Geometry/Topology Conference*, Gökova, Turkey, May 2008.
- *Special Mini Course on 4-Manifolds*, University of Zürich, Switzerland, May 2008 (3 talks).
- *Algebraic Geometry Seminar*, University of Zürich, Switzerland, May 2008.
- *Colloquium*, Koc University, Istanbul, Turkey, February 2008.
- *Special Colloquium*, University of Minnesota, Minneapolis, February 2008.
- *Special Colloquium*, SUNY at Stony Brook, New York, February 2008.
- *Colloquium*, University of California, Santa Cruz, January 2008.
- *Colloquium*, University of California, Riverside, January 2008.
- *Topology Seminar*, University of Zürich, Zurich, December 2007.
- *Topology Seminar*, Yale University, New Heaven, December 2007.
- *Topology Seminar*, Michigan State University, East Lansing, November 2007.
- *Topology Seminar*, University of Rochester, Rochester, November 2007. (2 talks)
- *Symplectic Geometry and Gauge Theory Seminar*, Columbia University, New York, October 2007.
- *Topology Seminar*, UC Berkeley, Berkeley, October 2007.
- *Topology Seminar*, UCLA, Los Angeles, October 2007.
- *Geometric Topology Conference*, Beijing, China, June 2007.
- *Gökova Geometry/Topology Conference*, Gökova, Turkey, May 2007.
- *Georgia Topology Conference*, University of Georgia, Athens, May 2007.
- *Topology Seminar*, University of Georgia, Athens, April 2007.
- *Topology Seminar and Colloquim*, University of Miami, Coral Gables, April 2007.
- *Differential Geometry and Symplectic Topology Seminar*, University of Minnesota, Minneapolis, March 2007.
- *Topology Seminar*, Indiana University, Bloomington, January 2007.
- *Construction of Small Exotic 4-Manifolds*, AMS Sectional Meeting, Special Session on Recent Developments in Floer Homology, New Orleans, January 2007.
- *Topology Seminar*, Georgia Tech, Atlanta, September 2006.

- *Surface Bundles with Non-Zero Signature*, Topology and Applications Conference, Pueabla, Mexico, July 2005.
- *Monsky-Washnitzer Cohomology*, Number Theory Seminar, UC Irvine, Fall 2002.
- *Elliptic Curves with Complex Multiplication*, Number Theory Seminar, UC Irvine, Winter 2002.
- *Rational Points on Elliptic Curves*, Graduate Colloquim, UC Irvine, Spring 2001.