

# Seungsang Oh

Professor

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## Research Interests

3-dimensional Topology  
Knot Theory  
Enumerative Combinatorics

## Employment

2002 – present	Professor in Dept. of Mathematics at Korea University
2012 – 2013	Visiting Scholar at Georgia Institute of Technology
2000 – 2002	Assistant Professor at Chonbuk National University
1999	Researcher at KAIST
1996	Researcher at MSRI, University of California at Berkeley

## Education

1996	Ph. D. at University of Texas at Austin (advisor: Cameron McA Gordon)
1992	B. S. at Korea Advanced Institute of Science and Technology (KAIST)

## Awards

2004	30 Excellent Research Result Award from KOSEF
1992 – 1994	Dodd Fellowships from Department of Mathematics at UT Austin
1991	2nd prize in the National Mathematics Competition for College Student
1989	8th prize in the National Mathematics Competition for College Student

## Grants

2017 – 2022	NRF grant funded by the Korea government(MSIP)
2014 – 2017	NRF grant funded by the Korea government(MSIP)
2011 – 2014	NRF grant funded by the Ministry of Science, ICT & Future Planning(MSIP)
2009 – 2012	NRF grant funded by the Korea government (MEST)
2007 – 2010	KOSEF grant funded by the Korea government (MOST)
2006 – 2009	KOSEF grant funded by the Korean government (MOEHRD)
2003 – 2006	KOSEF grant funded by the Korea government
2001 – 2003	KOSEF grant funded by the Korea government

## Publications

40. *Arc index of spatial graphs*, J Graph Theor (in press)
39. *More intrinsically knotted graphs with 22 edges and the restoring method*, J Knot Theor Ramif (in press)
38. *Bounds on multiple self-avoiding polygons*, Can Math Bull (in press)

37. *Domino tilings of the expanded Aztec diamond*, Discrete Math (in press)
36. *Stick number of spatial graphs*, J Knot Theor Ramif **26**, 1750100 (2017)
35. *Maximal independent sets on a grid graph*, Discrete Math **340**, 2762–2768 (2017)
34. *A new intrinsically knotted graph with 22 edges*, Topol Appl **228**, 303–317 (2017)
33. *Bipartite intrinsically knotted graphs with 22 edges*, J Graph Theor **85**, 568–584 (2017)
32. *Enumeration on graph mosaics*, J Knot Theor Ramif **26**, 1750032 (2017)
31. *Period and toroidal knot mosaics*, J Knot Theor Ramif **26**, 1750031 (2017)
30. *Enumerating independent vertex sets in grid graphs*, Linear Algebra Appl **510**, 192–204 (2016)
29. *Best packing of identical helices*, J Phys A: Math Theor **49**, 415205 (2016)
28. *Quantum knot mosaics and the growth constant*, Topol Appl **210**, 311–316 (2016)
27. *Exactly fourteen intrinsically knotted graphs have 21 edges*, Algebr Geom Topol **15**, 3305–3322 (2016)
26. *Quantum knots and the number of knot mosaics*, Quantum Inf Process **14**, 801–811 (2015)
25. *Link lengths and their growth powers*, J Phys A: Math Theor **48**, 035202 (2015)
24. *Mosaic number of knots*, J Knot Theor Ramif **23**, 1450069 (2014)
23. *Upper bound on the total number of knot  $n$ -mosaics*, J Knot Theor Ramif **23**, 1450065 (2014)
22. *Minimum lattice length and ropelength of 2-bridge knots and links*, J Math Phys **55**, 113503 (2014)
21. *Small knot mosaics and partition matrices*, J Phys A: Math Theor **47**, 435201 (2014)
20. *Minimum lattice length and ropelength of knots*, J Knot Theor Ramif **23**, 1460009 (2014)
19. *Equilateral stick number of knots*, J Knot Theor Ramif **23**, 1460008 (2014)
18. *Links with small lattice stick numbers*, J Phys A: Math Theor **47**, 155202 (2014)
17. *Upper bound on lattice stick number of knots*, Math Proc Cambridge **155**, 173–179 (2013)
16. *Upper bounds on the minimum length of cubic lattice knots*, J Phys A: Math Theor **46**, 125001 (2013)
15. *Stick numbers of 2-bridge knots and links*, P Am Math Soc **139**, 4143–4152 (2011)
14. *An upper bound on stick number of knots*, J Knot Theor Ramif **20**, 741–747 (2011)
13. *Knots with small lattice stick numbers*, J Phys A: Math Theor **43**, 265002 (2010)
12. *Reducing Dehn fillings and small surfaces*, P Lond Math Soc **92**, 203–223 (2006)
11. *Lattice stick numbers of small knots*, J Knot Theor Ramif **14**, 859–867 (2005)
10. *Planar graphs producing no strongly almost trivial embedding*, J Graph Theor **43**, 319–326 (2003)
9. *Reducing spheres and Klein bottles after Dehn fillings*, Can Math Bull **46**, 265–267 (2003)
8.  *$P^2$  reducing and toroidal Dehn fillings*, Math Proc Cambridge **134**, 271–288 (2003)
7. *An elementary set for theta- $n$ -curve projections*, J Knot Theor Ramif **11**, 1243–1250 (2002)
6. *Constructing persistently laminar knots*, Topol Appl **124**, 139–143 (2002)
5. *Dehn fillings creating essential spheres and tori*, J Knot Theor Ramif **11**, 887–890 (2002)

4. *Strongly almost trivial theta-curves*, J Knot Theor Ramif **11**, 153–164 (2002)
3. *Dehn filling, reducible 3-manifolds, and Klein bottles*, P Am Math Soc **126**, 289–296 (1998)
2. *Reducible and toroidal 3-manifolds obtained by Dehn fillings*, Topol Appl **75**, 93–104 (1997)
1. *Knotted solid tori decompositions of  $B^3$  and  $S^3$* , J Knot Theor Ramif **5**, 405–416 (1996)

## Talks

24. *Upper bounds on the number of crossings of Delta diagrams*, School of Spatial Graph Theory, Nihon University, Tokyo, Japan (2018.01.23)
23. *Upper Bounds on Braid Index and Arc Index*, 2nd Pan Pacific International Conference on Topology and Applications, Novotel, Pusan, Korea (2017.11.15)
22. *Number of Independent Vertex Sets*, 1st Meeting on Spatial Graph Theory, Chonbuk National University, Jeonju, Korea (2017.08.17)
21. *Enumeration of rigid lattice links*, 2nd Mini Workshop on Knot Theory, POSTECH, Pohang, Korea (2016.12.17)
20. *Enumeration algorithm for lattice model*, International Workshop on Spatial Graphs 2016, Waseda University, Tokyo, Japan (2016.08.05)
19. *Enumeration of various 2-dimensional lattice models*, 11th KIAS Combinatorics Workshop, KIAS, Seoul, Korea (2016.02.26)
18. *Combinatorics on 2-dimensional lattice models*, 11th East Asian School of Knots and Related Topics, Osaka City University, Osaka, Japan (2016.01.28)
17. *New enumeration algorithm on lattice combinatorics*, Knots and Spatial Graphs 2015 at KAIST, KAIST, Daejeon, Korea (2015.11.06)
16. *Lattice model enumeration by the state matrix recursion algorithm*, AMS Special Session on Spatial Graphs, California State University, Fullerton, USA (2015.10.25)
15. *Introduction to the state matrix algorithm for multiple self-avoiding polygon enumerations*, 10th East Asian School of Knots and Related Topics, East China Normal University, Shanghai, China (2015.01.27)
14. *Census of knot mosaics*, Knots and Low Dimensional Manifolds: a Satellite conference of Seoul ICM 2014, Bexco Center, Busan, Korea (2014.08.25)
13. *Total number of Knot mosaics*, International Workshop on Spatial Graphs 2013, Tokyo Woman's Christian University, Tokyo, Japan (2013.08.13)
12. *Dehn fillings and small surfaces*, Satellite Conference in Geometric Topology, Shanxi Normal University, Xi'an, China (2002.08.15)
11. *Reducible, annular and toroidal Dehn fillings*, 2002 KMS Spring Meeting, Hoseo University, Korea (2002.04.27)
10. *Dehn fillings and small surfaces*, 9th Japan-Korea School of Knots and Links, Nara Women's University, Nara, Japan (2002.01.16)
9. *Dehn fillings and small surfaces*, 2001 KMS Fall Meeting, Ewha Womans University, Korea (2001.10.20)
8. *Dehn fillings producing small surfaces*, MathNet Colloquium Series (Topology), Yangpyong, Korea (2001.08.24)

7. *Dehn fillings and small surfaces, I*, On Heegaard Splittings and Dehn surgeries of 3-manifolds, RIMS, Kyoto University, Japan (2001.06.12)
6. *Dehn fillings and small surfaces*, 2001 KMS Spring Meeting, Dong Eui University, Korea (2001.04.21)
5. *Reducing and toroidal Dehn fillings*, Art of low dimensional Topology VII, Kansai, Japan (2001.02.16)
4. *Dehn fillings producing exceptional manifolds*, Mathematics in the New Millennium, Yonsei University, Korea (2000.10.20)
3. *Toroidal and  $P^2$ -reducible Dehn fillings*, Knots 2000, Yongpyong, Korea (2000.08.02)
2. *A remark on persistent lamination*, Daewoo Workshop (Topology), Postech, Korea (1999.07.21)
1. *Knotted solid tori decompositions of  $B^3$  and  $S^3$* , 7th Japan-Korea School of Knots and Links, Kobe Institute, Kobe, Japan (1999.02.15)