

Edward D. Kim

Curriculum Vitae

Department of Mathematics
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Personal summary

Place of birth San Francisco, CA, United States of America
Nationality United States of America

Appointments

- Aug 2013 – **Assistant Professor**, *University of Wisconsin-La Crosse*, La Crosse, WI, United States of America.
Tenure-track Assistant Professor in the Department of Mathematics
- Apr 2013 – **Lecturer**, *University of California, Davis*, Davis, CA, United States of America.
Jun 2013 Lecturer in the Department of Mathematics.
◦ was instructor of record for two large-lecture classes
◦ mentored the professional teaching development for five graduate students in Mathematics and Statistics
◦ nominated for an ASUCD Excellence in Education Award
- Oct 2011 – **BK21 Postdoctoral Research Fellow**, *Pohang University of Science and Technology*, Pohang, Republic of Korea.
Sep 2012 Postdoctoral researcher in the CoDiMaRO (Continuous and Discrete Mathematics Research Organization) group in the Department of Mathematics, supported by BK21
- Sep 2010 – Sep 2011 **NWO Postdoctoral Research Fellow**, *Technische Universiteit Delft*, Delft, The Netherlands.
Postdoctoral researcher in the Delft Institute of Applied Mathematics (Toegepaste Wiskunde) supported by Vidi grant 639.032.917 from the Netherlands Organization for Scientific Research (NWO), under supervision of Frank Vallentin

Education

- 2010 **Ph.D., Mathematics**, *University of California, Davis*, Davis, CA, United States of America, *conferred June 10, 2010*.
Thesis title ‘*Geometric Combinatorics of Transportation Polytopes and the Behavior of the Simplex Method*’, under supervision of Jesús A. De Loera
- 2007 **M.A., Mathematics**, *University of California, Davis*, Davis, CA, United States of America, *conferred March 22, 2007*.
- 2004 **B.A., Mathematics**, *University of California, Berkeley*, Berkeley, CA, United States of America, *conferred December 21, 2004*.

Publications

J. M. Gallagher, E. D. Kim. An improved upper bound on the diameters of subset partition graphs. (submitted). Available at arXiv:1603.04052v1.

E. D. Kim. Relating graphs of trigonometric functions to points on the unit circle via using special-purpose rulers. *Wisconsin Teacher of Mathematics*, 67(2):23-26, 2015.

J. M. Gallagher, E. D. Kim. An improved upper bound on the diameters of subset partition graphs. (in progress). Available at arXiv:1412.5691v1.

T. C. Bogart, E. D. Kim. Superlinear subset partition graphs with strong adjacency, endpoint-count, and dimension reduction. To appear in *Combinatorica*. Available at arXiv:1409.7133v1.

J. A. De Loera, E. D. Kim. Combinatorics and geometry of transportation polytopes: An update. In *Discrete Geometry and Algebraic Combinatorics*, volume 625 of *Contemp. Math.*, pages 37–76. Amer. Math. Soc., Providence, RI, 2014.

E. D. Kim. Polyhedral graph abstractions and an approach to the Linear Hirsch Conjecture. *Mathematical Programming (Ser. A)*. 143:357–370, 2014.

- See also: E. D. Kim. Polyhedral graph abstractions and an approach to the Linear Hirsch Conjecture. In *Electronic Notes in Discrete Mathematics (Proc. EuroComb '11: The Sixth European Conference on Combinatorics, Graph Theory and Applications 2011, Budapest)*, 38:511–516, 2011.

A. de Oliveira, E. D. Kim, M. Noy, A. Padrol, J. Pfeifle, V. Pilaud. Polytopal complexes realizing products of graphs. In *Proc. XIV Spanish Meeting on Computational Geometry, Alcalá de Henares*, pages 161–164. Centre de Recerca Matemàtica, 2011.

E. D. Kim. *Geometric Combinatorics of Transportation Polytopes and the Behavior of the Simplex Method*. PhD thesis, University of California, Davis. Davis, CA, 2010.

E. D. Kim, F. Santos. An update on the Hirsch conjecture. *Jahresbericht der Deutschen Mathematiker-Vereinigung*. 112(2):73–98, 2010.

- See also: E. D. Kim and F. Santos. An update on the Hirsch conjecture. In *Proc. Conference on Combinatorial Structures in Algebra and Topology 2009, Osnabrück, Germany*, pages 65–76. Universität Osnabrück, 2010.

A. Gundert, E. D. Kim, and D. Schymura. Lattice paths and Lagrangian matroids. Technical report *DocCourse Combinatorics and Geometry 2009: Discrete and Computational Geometry – Part III: Research Reports*, Centre de Recerca Matemàtica, 63–82, 2010.

J. A. De Loera, E. D. Kim, S. Onn, and F. Santos. Graphs of Transportation Polytopes. *J. Combin. Theory (Ser. A)*. 116(8):1306–1325, 2009.

Selected presentations

Contributing speaker, *2016 Joint Mathematics Meetings: MAA General Contributed Paper Session on Mathematics and Technology*, Washington State Convention Center, Seattle, WA, United States of America. January 6–9, 2016.

Contributing speaker, *Teaching Mathematics with Technology*, University of Wisconsin-La Crosse, La Crosse, WI, United States of America. July 20–21, 2015.

Contributing speaker, *Wisconsin Mathematics Council 2015 Annual Conference*, Green Lake Conference Center, Green Lake, WI, United States of America. May 8, 2015.

Contributing speaker, *MAA Wisconsin Spring 2015 meeting*, Ripon College, Ripon, WI, United States of America. April 24, 2015.

Contributing speaker, *Mathematics Colloquium*, Loras College, Dubuque, IA, United States of America. February 20, 2015.

Contributing speaker, *2015 Joint Mathematics Meetings: MAA General Contributed Paper Session on Research in Graph Theory, I*, Henry B. González Convention Center, San Antonio, TX, United States of America. January 10–13, 2015.

Invited speaker, *Project NExT Wisconsin Fall 2014 Conference*, University of Wisconsin-Baraboo/Sauk County, Baraboo, WI, United States of America. October 4–5, 2014.

Invited speaker, *Recent Advances in Linear Optimization*, Ecole des Ponts – “ParisTech”, Paris, France. July 30 – August 1, 2014.

Contributing speaker, *MAA Wisconsin Spring 2014 meeting*, University of Wisconsin-Whitewater, Whitewater, WI, United States of America. April 4–5, 2014.

Invited speaker, *Mathematics Colloquium*, Universidad de los Andes, Bogotá, Colombia. May 9, 2013.

Invited speaker, *Mathematics Colloquium*, Northwest Missouri State University, Maryville, MO, United States of America. March 13, 2013.

Invited speaker, *Mathematics Colloquium*, University of Wisconsin-La Crosse, La Crosse, WI, United States of America. March 8, 2013.

Invited speaker, *2013 Joint Mathematics Meetings: AMS Special Session on Topological Combinatorics, II*, San Diego Convention Center, San Diego, CA, United States of America. January 9 – 12, 2013.

Invited speaker, *21st International Symposium on Mathematical Programming*, Technische Universität Berlin, Berlin, Germany. August 19 – 24, 2012.

Invited speaker, *2012 Meeting of the Yeungnam Mathematical Society*, Kumoh National Institute of Technology, Gumi, Republic of Korea. June 30, 2012.

Invited speaker, *50th KPPY Combinatorics Workshop*, Pusan National University, Busan, Republic of Korea. February 28, 2012.

Invited speaker, *Discrete Geometry Day*, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea. February 1, 2012.

Invited speaker, *Korea-Japan Workshop on Algebra and Combinatorics*, Pohang University of Science and Technology, Pohang, Republic of Korea. January 26–28, 2012.

Invited speaker, *49th KPPY Combinatorics Workshop*, Kyungpook National University, Daegu, Republic of Korea. December 3, 2011.

Invited speaker, *KAIST Discrete Math Seminar*, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea. October 14, 2011.

Contributing speaker, *Conference on Discrete Geometry and Optimization: 2011 Thematic Program on Discrete Geometry and Applications*, Fields Institute, Toronto, Ontario, Canada. September 19–23, 2011.

Contributing speaker, *EuroComb'11: European Conference on Combinatorics, Graph Theory and Applications*, Rényi Institute, Budapest, Hungary. August 29 – September 2, 2011.

Invited speaker, *CWI 3rd SDP day: Applications of semidefinite programming*, Centrum Wiskunde en Informatica, Amsterdam, The Netherlands. July 1, 2011.

Contributing speaker, *2nd Alpen-Adria Workshop on Optimization 2011*, Universität Klagenfurt, Klagenfurt, Austria. May 12–14, 2011.

Invited speaker, *IPAM Workshop "Efficiency of the Simplex Method: Quo vadis Hirsch conjecture?"*, Institute for Pure and Applied Mathematics, Los Angeles, CA, United States of America. January 18–21, 2011.

Invited speaker, *CMS Special Session – Geometric and Combinatorial Aspects of Convex Optimization. Summer 2010 Meeting of the Canadian Mathematical Society*, University of New Brunswick, Fredericton, Fredericton, NB, Canada. June 4–6, 2010.

Invited speaker, *AMS Special Session – Geometric Combinatorics. Spring 2010 Western Section Meeting of the American Mathematical Society*, University of New Mexico, Albuquerque, NM, United States of America. April 17–18, 2010.

Contributing speaker, *Centre de Recerca Matemàtica DocCourse*, Universitat Politècnica de Catalunya, Barcelona, Spain. January 15, 2009.

Contributing poster, *MIP 2008*, Columbia University, New York, NY, United States of America. August 4–7, 2008.

Special course presentation, *MSRI Workshop on Continuous Optimization and its Applications*, Mathematical Sciences Research Institute, Berkeley, CA, United States of America. July 17, 2007.

Contributing speaker, *Graduate Student Combinatorics Conference 2007*, University of Washington, Seattle, WA, United States of America. April 22, 2007.

Contributing poster, *Workshop on Geometric and Topological Combinatorics*, Universidad de Alcalá, Madrid, Spain. August 31 – September 5, 2006.

Visiting research positions

- May 2013 **Universidad de los Andes**, Bogotá, Colombia.
- June 2012 **Yeungnam University**, Gyeongsan, Republic of Korea.
- March 2012 **Technische Universiteit Delft**, Delft, The Netherlands.
- January 2012 **Korea Advanced Institute of Science and Technology**, Daejeon, Republic of Korea.
- May 2011 **Université Pierre et Marie Curie – CNRS, Institut de Mathématiques**, Paris, France.
- May 2011 **Université Paris Diderot - Paris 7**, Paris, France.
- April 2011 **Eidgenössische Technische Hochschule Zürich**, Zürich, Switzerland.
- June 2010 **Universitat Politècnica de Catalunya**, Barcelona, Spain.

Teaching

- Spring 2016 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 175 – Applied Calculus
- Spring 2016 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 411 – Abstract Algebra
- Fall 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 175 – Applied Calculus
- Fall 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 310 – Calculus, Third Course
- Summer 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 175 – Applied Calculus
- Spring 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 151 – Precalculus
- Spring 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 411 – Topics in Linear Algebra
- Spring 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 498 – Independent Study: Matroid Theory
- Spring 2015 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 498 – Independent Study: Applications of Group Theory to Chemistry
- Fall 2014 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 151 – Precalculus
- Fall 2014 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 208 – Calculus, Second Course

- Fall 2014 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 499 – Research Topics: Combinatorics of Transportation Polytopes
- Spring 2014 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 207 – Calculus, First Course
- Spring 2014 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 495 – Special Topics: Convex Optimization and Polytopes
- Fall 2013 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 151 – Precalculus
- Fall 2013 **Instructor**, *University of Wisconsin–La Crosse*.
Mathematics 207 – Calculus, First Course
- Spring 2013 **Instructor**, *University of California, Davis*.
Mathematics 21C – Calculus, Third Course
- Spring 2013 **Instructor**, *University of California, Davis*.
Mathematics 21D – Vector Analysis
- Spring 2010 **Lead teaching assistant**, *University of California, Davis*.
Mathematics 21C – Calculus, Third Course
 - Administered the WeBWorK online homework system
 - Addressed the administrative concerns of a course with 200 students
 - Managed duties of the other teaching assistants for the course
 - Assisted instructor of record with assigning final grades
- Spring 2008 **Teaching assistant**, *University of California, Davis*.
Mathematics 250C – Graduate Algebra, Third Course
- Spring 2008 **Teaching assistant**, *University of California, Davis*.
Mathematics 21C – Calculus, Third Course
- Fall 2007 **Teaching assistant**, *University of California, Davis*.
Mathematics 165 – Ideals, Varieties, and Algorithms
- Fall 2006 **Teaching assistant**, *University of California, Davis*.
Mathematics 165 – Ideals, Varieties, and Algorithms
- Summer 2006 **Associate instructor**, *University of California, Davis*.
Mathematics 21C – Calculus, Third Course
 - Instructor of record: prepared lectures, examinations, and exercises
 - Managed student interaction with homework grader
 - Assessed student work for examinations and determined final grades
- Winter 2006 **Teaching assistant**, *University of California, Davis*.
Mathematics 21B – Calculus, Second Course
 - Received special commendation from instructor of record for excellence as a teaching assistant
- Fall 2005 **Teaching assistant**, *University of California, Davis*.
Mathematics 22B – Differential Equations

Special courses

MDS Summer School, *Combinatorics of Linear and Semidefinite Programming*, Technische Universität Berlin, Döllnsee, Germany. August 14 – 16, 2012.

2nd Alpen-Adria Workshop, Optimization 2011, Universität Klagenfurt, Klagenfurt, Austria. May 12–14, 2011.

Combinatorics Tutorials, *Thematic semester at IPAM*, Institute for Pure and Applied Mathematics, Los Angeles, CA, United States of America. September 9–16, 2009.

I-Math Winter School, DocCourse 2009 in Combinatorics and Geometry, Centre de Recerca Matemàtica, Barcelona, Spain. January 8 – March 27, 2009.

Applicable Algebraic Geometry, *Institute for Mathematics and its Applications participating institutions summer program for graduate students*, Texas A&M University, College Station, TX, United States of America. July 23 – August 10, 2007.

Continuous Optimization and Applications, *MSRI Summer School for Graduate Students*, Mathematical Sciences Research Institute, Berkeley, CA, United States of America. July 9 – 20, 2007.

Algebraic Algorithms in Optimization, Institute for Mathematics and its Applications, Minneapolis, MN, United States of America. January 12 – 13, 2007.

Advanced Course on Combinatorial and Computational Geometry – Trends and topics for the future, *Advanced course held concurrently with ICM satellite conference*, Universidad de Alcalá, Madrid, Spain. August 31 – September 5, 2006.

Professional Development

2015 **Conference Participant**, *Project NExT Wisconsin*.

Participant in the conference *Project NExT Wisconsin Fall 2015 Conference*. University of Wisconsin-Baraboo/Sauk County. Baraboo, WI, United States of America. November 7–8, 2015.

2015 **Workshop Participant**, *MAA Project NExT*.

Participant in the workshop *Project NExT: New Jobs, New Responsibilities, New Ideas*. August 4–5, 2015.

2015 **Workshop Participant**, *Project NExT Wisconsin*.

Participant in the conference *Project NExT Wisconsin Spring 2015 Workshop*. Ripon College. Ripon, WI, United States of America. April 25, 2015.

2014 **Conference Participant**, *Project NExT Wisconsin*.

Participant in the conference *Project NExT Wisconsin Fall 2014 Conference*. University of Wisconsin-Baraboo/Sauk County. Baraboo, WI, United States of America. October 4–5, 2014.

2014 **Workshop Participant**, *MAA Project NExT*.

Participant in the workshop *Project NExT: New Jobs, New Responsibilities, New Ideas*. August 4–6, 2014.

2014 **Workshop Participant**, *Project NExT Wisconsin*.

Participant in the conference *Project NExT Wisconsin Spring 2014 Workshop*. University of Wisconsin-Whitewater. Whitewater, WI, United States of America. April 5, 2014.

2013 **Conference Participant**, *Project NExT Wisconsin*.

Participant in the conference *Project NExT Wisconsin Fall 2013 Conference*. University of Wisconsin-Baraboo/Sauk County. Baraboo, WI, United States of America. October 5–6, 2013.

- 2013 **Workshop Participant**, *University of California, Davis. Student Health and Counseling Services.*
Participant in the workshop *Recognizing and Responding to Students in Distress* for UC Davis faculty and teaching assistants presented by Drs. Shana Alexander and Zachary Ward. May 24, 2013.

Awards and Grants

- 2015 **Recipient**, *Provost's Teaching Excellence Award.*
Recipient of one of six annual teaching awards from the Office of the Provost at the University of Wisconsin–La Crosse. Award announced May 10, 2015.
- 2014 **Nominee**, *Provost's Teaching Excellence Award.*
Nominee for teaching award from the Office of the Provost at the University of Wisconsin–La Crosse.
- 2014 **Faculty Research Grant**, *University of Wisconsin–La Crosse.*
Research grant to support research in Summer 2014 and mentorship of an undergraduate student researcher. Accepted December 2013.
- 2013 **Early Start Participant**, *University of Wisconsin–La Crosse College of Science and Health.*
Application to the early start of appointment program approved. Acceptance grants the opportunity to begin employment one month earlier (on August 1, 2013) than initially anticipated for the purpose of writing and ultimately submitting at least two grant proposals to support research activities.
- 2013 **Nominee**, *ASUCD Excellence in Education Awards.*
Nominated for outstanding undergraduate teaching after less than one quarter of instruction for the 11th Annual Excellence in Education Award by the Associated Students of the University of California, Davis. Award presented May 20, 2013.
- 2010 **Travel Fellowship**, *UC Davis Graduate Student Association.*
Travel award to speak at *AMS Special Session: Geometric Combinatorics. Spring 2010 Western Section Meeting of the American Mathematical Society. University of New Mexico. Albuquerque, NM, United States of America. April 17–18, 2010.* Awarded January 2010.
- 2009 **NSF VIGRE Summer Research Fellowship**, *University of California, Davis.*
Continued research for thesis
- 2009 **Travel Fellowship**, *Centre de Recerca Matemàtica.*
Full stipend support for the 2009 Winter DocCourse in Combinatorics and Geometry
- 2008 **NSF VIGRE Summer Research Fellowship**, *University of California, Davis.*
Continued research for thesis
- 2007 **Travel Fellowship**, *Institute for Mathematics and its Applications.*
Full housing and travel support by the Institute for Mathematics and its Applications for the 2007 Summer program for graduate students at Texas A&M University.
- 2007 **NSF VIGRE Summer Research Fellowship**, *University of California, Davis.*
Continued research for thesis
- 2006 **NSF VIGRE Summer Research Fellowship**, *University of California, Davis.*
Developed **transax** and **transplan**, software for the enumeration of all nondegenerate axial and planar transportation polytopes of specified table size

Community outreach

- Summer 2015 **Speaker**, *Rufus King International School*, University of Wisconsin-La Crosse.
Guest speaker for academic session with middle school students from Rufus King International School, Milwaukee, WI.
- Summer 2012 **Co-founder**, *Salja: Why Tomorrow Is Worth It*, Pohang, Gyeongbuk, Republic of Korea.
Salja was founded to collaborate with Korea's individuals and communities in cultivating inspiration and nurture for people to believe in their personal value and to imagine life's wonderful possibilities
- Winter 2007 **Math Circle Instructor**, *UC Davis Explore Math Program*, Davis, CA, United States of America.
- Instructor for the UC Davis Math Circle, a weekend outreach program for motivated high school students
 - Developed curriculum for a customized course for high school students in algorithms and combinatorics
 - Mentored two undergraduate students interested mathematics education, giving individual feedback to improve their teaching and presentation skills in front of a large audience

Service

- 2015- **Chair**, *Joint Multicultural Affairs Committee*.
Chair of the Joint Multicultural Affairs Committee at the University of Wisconsin-La Crosse, reporting to the chancellor
- 2014 **Panel co-organizer**, *Project NExT*.
Co-organized the panel session *Engaging in undergraduate research: from funding to publishing* held at the 2015 Joint Mathematics Meetings together with Katie Anders, Jeremiah Bartz, Heather Moon.
- 2010 **Webmaster**, *Algebra and Topology in Interaction*.
Webmaster for the UC Davis - MSRI Conference in honor of Professor Dmitry Fuchs on the occasion of his 70th anniversary, held at the University of California, Davis
- 2010 **Webmaster**, *WetsFest*.
Webmaster for the symposium in honor of Professor Roger J-B Wets on the occasion of his retirement, held at the University of California, Davis
- 2009 **Workshop assistant**, *MAA-NCS 2009 Summer Seminar "Actually Doing It!, A Hands-On Approach to Computational Combinatorial Geometry"*, St. John's University, Collegeville, MN, United States of America. July 19–24, 2009.
Moderated computer laboratory exercise sessions for attending professors at liberal arts colleges interested in creating research projects for undergraduate students.
- 2006–2009 **Webmaster**, *UC Davis Galois Group*.
Web development for the mathematics graduate student organization at the University of California, Davis
- 2008–2009 **Representative – Undergraduate Program Committee**, *UC Davis Galois Group*.
Served as graduate student representative to the Department of Mathematics committee for undergraduate education

- 2008 **Conference co-organizer**, *GSCC 2008*, University of California, Davis.
Co-organized the Graduate Student Combinatorics Conference held April 12–13, 2008 with Chris Berg, Sonya Berg, and Steven Pon.

Professional Memberships

Mathematical Association of America, *Member*.
Project NExT Wisconsin, *Participant*.
MAA Project NExT, *2014-15 Project NExT Fellow*.

Supervised Students

J. Mackenzie Gallagher, *Spring 2014–Spring 2015*.

- Independent study during Spring 2014 on Convex Polytopes and Optimization
- Research student on Summer 2014 UW-L Faculty Research Grant
- Immediate post-graduation placement: Ph.D. student in Mathematics at George Mason University

Thong M. Le, *Spring 2014–Spring 2015*.

- Independent study during Spring 2014 on Convex Polytopes and Optimization
- Research student on Spring 2015 UW-L URC Grant
- Immediate post-graduation placement: Ph.D. student in Computer Science at University of California, Davis

Ancillary Activities

McNair Scholars, *Summer 2014–present*.

- Instructor for GRE Quantitative Reasoning Summer workshops

Languages

English	Native
Korean	Advanced
Spanish	Intermediate
Dutch	Basic
French	Basic