

Aalto University
P.O. Box 11100
FI-00076 Aalto
Finland

kaie.kubjas@aalto.fi
<https://www.kaiekubjas.com>

RESEARCH INTERESTS:

Applied and Computational Algebraic Geometry, Algebraic Statistics, Applications to Biology, Optimization, Polyhedral Geometry

EMPLOYMENT:

2017-pres. Assistant Professor at Aalto University, Finland
2018-2019 Marie Skłodowska-Curie Fellow at Sorbonne Universités, UPMC, France
2017-2018 Marie Skłodowska-Curie Fellow at MIT, USA
2014-2016 Aalto Science Fellow at Aalto University, Finland

SHORT-TERM POSITIONS:

2014 Fall Microsoft Research Fellow at the Simons Institute for the Theory of Computing, Berkeley, USA
Participated in the program “Algorithms and Complexity in Algebraic Geometry”
2013 Fall Visiting postdoctoral researcher at Max Planck Institute for Mathematics, Bonn, Germany

EDUCATION:

2009-2013 PhD in mathematics, Freie Universität Berlin, Germany
Advisors: Christian Haase, Klaus Altmann
2007-2009 Phase I in mathematics, Berlin Technische Universität, Germany
2004-2007 BS in mathematics, University of Tartu, Estonia
Fall 2005 spent at University of North Carolina at Greensboro

EXTENDED RESEARCH VISITS:

2018 Oct. Semester on Nonlinear Algebra, ICERM, Providence
2015 Oct. Université Pierre-et-Marie-Curie, France
2012 June Goethe Universität Frankfurt am Main, Germany
2011 Jan. Goethe Universität Frankfurt am Main, Germany

HONORS AND AWARDS:**Grants:**

2019-2023 Academy of Finland Project funding for early-career researchers
2017-2019 Marie Skłodowska-Curie Individual Global Fellowship
2014-2017 A member of Aalto Science Institute thematic program “Challenges in large geometric structures and big data”

Scholarships:

2009-2013 Berlin Mathematical School Phase II scholarship
2007-2009 Berlin Mathematical School Phase I scholarship

Prizes:

2008 Estonian Mathematical Society: award for the best Bachelor thesis

- 2004 International Mathematical Olympiad: honorable mention
2003 Baltic Way (international mathematics competition in teams): 3rd place

INVITED TALKS:

Invited plenary and keynote talks:

- 2019 June MEGA 2019: Effective Methods in Algebraic Geometry (Madrid, Spain)
2018 Nov. Celebration of Mathematics: 150 years of the Finnish Mathematical Society (Helsinki, Finland)

Invited colloquium talks:

- 2019 March Mathematics Colloquium (University of Ljubljana)
2017 Nov. Colloquium, Institute of Mathematics (Universität Osnabrück)
2017 Feb. Women in Mathematics Colloquium (Aalto University)
2014 Nov. Colloquium, Department of Mathematics and Statistics (San Diego State University)

Invited conference and workshop talks:

- 2020 July ICERM Virtual Workshop: Circle Packings and Geometric Rigidity (ICERM, Providence)
2019 Oct. Graphical Models: Conditional Independence and Algebraic Structures (TU Munich, Germany)
2019 Oct. Opening Conference for the Thematic Semester on Algebraic Geometry (FU Berlin, Germany)
2019 Sept. Einstein Workshop "Real Applied Algebraic Geometry" (TU Berlin, Germany)
2018 April Meeting on Applied Algebraic Geometry (Georgia Tech, Atlanta)
2017 Nov. Algebraic Methods in Statistics (Osnabrück, Germany)
2017 July Tensors and their Uses in Approximation Theory, Quantum Information Theory and Geometry (Auburn, AL)
2017 May Interactions between Algebra and the Sciences (Leipzig, Germany)
2017 April ASGARD Math (Oslo, Norway)
2017 Feb. PEAKs (Kleinwalsertal, Austria)
2016 May GOAL workshop (Paris, France)
2015 Dec. Algorithms and Complexity in Algebraic Geometry Reunion (Berkeley, CA)
2015 May NonLinear Algebra (Berlin, Germany)
2015 Feb. Limitations of convex programming: lower bounds on extended formulations and factorization ranks (Dagstuhl, Germany)
2014 Oct. Topological Combinatorics and Combinatorial Commutative Algebra (San Francisco, CA)
2014 Oct. Solving Polynomial Equations (Berkeley, CA)
2014 June Estonian Mathematics Days (Mulgimaa, Estonia)
2014 April Algebra and its Applications (Mokko, Estonia)
2013 March PEAKs (Kleinwalsertal, Austria)
2011 Sept. Conference on Tropical Geometry and Computational Biology (Saarbrücken, Germany)
2011 July Combinatorial Methods in Algebraic Geometry and Commutative Algebra (Leipzig, Germany)
2010 May Algebra and its Applications (Kääriku, Estonia)
- Invited seminar talks:
- 2020 Nov. Algebraic Statistics Online Seminar
2020 June Online Discrete Geometry Seminar (FU Berlin)

- 2020 March Nonlinear Algebra Seminar Online (MPI Leipzig)
- 2019 May Seminaire Francilien de Geometrie Algorithmique et Combinatoire (IHES)
- 2019 April Monday Lectures of Graduiertenkolleg “Facets of Complexity” (FU Berlin)
- 2019 March Algebra, Statistics, and Optimization Seminar (MIT)
- 2017 April Geometry, Combinatorics and Integrable Systems seminar (Ohio State)
- 2017 April Discrete Math Seminar (UMass Amherst)
- 2017 April Algebra Seminar (Georgia Tech)
- 2017 Oct. Valley Geometry Seminar (UMass Amherst)
- 2017 Oct. Seminar on Applied Algebra and Geometry (MIT)
- 2016 March Helsinki Algorithms Seminar (Aalto University)
- 2016 Feb. Edinburgh Geometry Seminar (University of Edinburgh)
- 2015 Oct. PolSys Seminar (Paris VI)
- 2015 Sept. Aalto Stochastics and Statistics Seminar (Aalto University)
- 2014 Dec. Combinatorics Seminar (San Jose State University)
- 2014 Dec. Algebra-Geometry-Combinatorics Seminar (San Francisco State University)
- 2014 June IAG Oberseminar (Otto von Guericke Universität Magdeburg)
- 2014 June ASci Seminar (Aalto University)
- 2014 April Doctoral School Seminar (University of Tartu)
- 2014 Feb. Discrete Math Lunch (University of Tartu)
- 2014 Feb. Eindhoven Discrete Math Seminar (Technische Universiteit Eindhoven)
- 2014 Jan. The Renaissance Combinatorics Seminar (Aalto University)
- 2013 Sept. Computational Algebraic Geometry Seminar (Max Planck Institute for Mathematics)
- 2013 July Student Seminar (Max Planck Institute for Mathematics)
- 2013 May MDS Monday Lecture (Freie Univerität Berlin)
- 2013 April Algebra and Combinatorics Seminar (Aalto University)
- 2013 Dec. Algebraic Geometry Seminar (Freie Univerität Berlin)
- 2012 June Algebra Seminar (University of Tartu)
- 2011 March Discrete Geometry Seminar (Freie Univerität Berlin)
- 2010 Feb. Lattice Polytopes Seminar (Freie Univerität Berlin)

ORGANIZATION:

- 2022 European Women in Mathematics General Assembly at Aalto University
- 2021 Applied Algebra Session at Nordic Congress of Mathematicians at Aalto University
- 2021 Workshop on Real Algebraic Geometry and Algorithms for Geometric Constraint Systems at the Fields Institute
- 2021 Executive committee member of MEGA 2021 at the Arctic University of Norway
- 2019-2020 Algebra and Discrete Mathematics Seminar at Aalto University
- 2019-2020 Mathematics and Systems Analysis Colloquium at Aalto University
- 2019 Invited Session on Algebraic Statistics at CMStatistics at University of London
- 2019 Program committee member of MACIS 2019 at Gebze Technical University
- 2019 Minisymposium on Euclidean Distance Geometry and Its Application at SIAM Conference on Applied Algebraic Geometry in Bern
- 2018 Special Session on Algebraic Statistics at the AMS Spring Eastern Sectional Meeting in Boston
- 2017 Large Structures Mini-Workshop at Aalto University
- 2016 Summer School on Algebra, Statistics and Combinatorics at Aalto University
- 2016 Statistics Day Helsinki at Aalto University

- 2015-2017 Large Structures Seminar at Aalto University
2014 Learning Seminar “Holonomic D-cember” at UC Berkeley
2014 Special Session on Algebraic Statistics at the AMS Fall Western Sectional Meeting in San Francisco
2014 Postdoc Algebraic Geometry Seminar at the Simons Institute
2013-2014 Seminar Days “Algebraic Coalescent” at Goethe Universität Frankfurt am Main
2013 Student Seminar at Max Planck Institute for Mathematics in Bonn

SERVICE:

- 2020-pres. Deputy convenor of European Women in Mathematics
2020-pres. Secretary of the SIAM Activity Group on Algebraic Geometry
2020 Reviewer for Heidelberg Laureate Forum
2018-pres. Member of the standing committee of European Women in Mathematics
2016-2020 Deputy treasurer of European Women in Mathematics
2014-pres. Referee for external theses:
- Alexandros Grosdos (PhD thesis, Osnabrück University, 2020)
 - Daniel Lemke (Master thesis, San Francisco State University, 2016)
 - Vootele Rõtov (Master thesis, University of Tartu, 2014)
- 2013-pres. Refereed conference and journal papers in algebra, discrete mathematics, mathematical biology and (algebraic) statistics
2013-2018 Reviewer for zbMATH
2008-2009 Student representative at Berlin Mathematical School
2006-2007 Student representative at University of Tartu

OUTREACH:

- 2018 Lectures on Detecting Fake News at Spark (an event for 7th and 8th graders taking place at MIT)
2015-2018 Referee for Akadeemiak, a journal for high-school students in Estonia
2012 Lectures in three high schools based on a video on Linear Optimization for the competition “Science for pupils” at University of Tartu
2005-2007 Member of Estonian Mathematical Olympiad Jury
2004-2007 Coaching students for mathematical olympiads at national level, Estonia
2004-2007 Substitute mathematics instructor at Hugo Treffner Gymnasium, Estonia

SUPERVISION OF PHD STUDENTS:

- 2019-pres. Muhammad Ardiyansyah
2019-pres. Olga Kuznetsova

MENTORING OF POSTDOCS:

- 2019-pres. Luca Sodomaco
2019-pres. Annachiara Korchmaros

SUPERVISION OF BACHELOR AND MASTER STUDENTS:

- 2020-pres. Aleksu Lahti (Bachelor thesis, co-advised with Luca Sodomaco)
2020 Etna Lindy (Bachelor thesis)
2020 Aapo Pajala (Bachelor thesis)

- 2019 Huanhuan Chen (summer intern, Master thesis written based on the internship)
2017-2020 Aki Malinen (Bachelor thesis)
2017-2018 Mateo Rendon (Master thesis)
2016-2017 Marc Härkönen (Master thesis, co-advised with Camilla Hollanti and Tomonari Sei)
2016 Anton Mallasto (summer intern, co-advised with Lasse Leskelä)
2015 Daniel Lemke (summer intern)
2014 Christopher Miller (summer intern)

TEACHING EXPERIENCE:

- 2020 Algebraic Statistics at Aalto University
2020 Abstract Algebra at Aalto University
2019 Computational Algebraic Geometry II at Aalto University
2019 Computational Algebraic Geometry at Aalto University
2019 Teaching assistant for the course “Nonparametric statistics” at the Summer School on Geometric and Algebraic Combinatorics at Sorbonne Universite in Paris
2018 Lecturer for the course “Algebraic methods for maximum likelihood estimation” at the Summer School in Algebraic Statistics at the Arctic University of Norway
2017 Tensors in applications at Aalto University (seminar)
2016 Lecturer of the mini-course “Geometry of nonnegative and positive semidefinite rank” at the Summer School on Algebra, Statistics and Combinatorics at Aalto University
2016 Computational Algebraic Geometry at Aalto
2015 Algebraic Statistics at Aalto
2010 Discrete Mathematics II at Freie Universität Berlin (teaching assistant)