

Yankı Lekili

- CONTACT INFORMATION** King's College London
Department of Mathematics
Strand, London WC2R 2LS
Email: yanki.lekili@kcl.ac.uk
- PERSONAL** Born 1983 in Turkey.
- EDUCATION** Massachusetts Institute of Technology 2005 - 2009
Ph.D. Mathematics
• Dissertation Topic: *Broken Lefschetz fibrations, Lagrangian matching invariants and Ozsváth-Szabó invariants*
• Advisor: Denis Auroux
École Normale Supérieure de Lyon 2004 - 2005
Maîtrise, Pure Mathematics.
University of California, Berkeley 2003 - 2004
Education abroad exchange student.
Bilkent University 2001 - 2004
B.A. in Mathematics.
- APPOINTMENTS** 2018 - Reader in Mathematics, King's College London
2013 - 2022 Royal Society University Research Fellow, King's College London.
2014 - 2015 Assistant Professor of Mathematics, University of Illinois, Chicago.
2010 - 2013 Herchel Smith Postdoctoral Research Fellow, University of Cambridge.
Fall 2010 MIT, Cambridge, Postdoctoral visiting position.
Summer 2010 Max Planck Institute, Bonn. Postdoctoral research fellow.
2009 - 2010 MSRI Postdoctoral Fellow, Symplectic and Contact Geometry and Topology.
- RESEARCH INTERESTS** Symplectic topology, Algebraic Geometry, Representation theory, Low-dimensional topology.
- ACADEMIC HONORS** Royal Society University Research Fellow, 2013-2022.
Herchel Smith Research Fellow at University of Cambridge 2010-2013.
Junior Research Fellow of King's College, Cambridge 2010-2013.
Charles and Jennifer Johnson Prize, MIT departmental award (best paper by a graduate student), 2009.
MIT, Presidential Fellowship, 2006.
MIT, Norman Levinson Fellowship, 2005.
- RESEARCH GRANTS** 2010-2013 Herchel Smith Postdoctoral Research Fellowship
2010-2014 Marie Curie Reintegration Grant EU-FP7-268389
2013-2022 Royal Society URF (suspended during 2014-2015)
2015-2018 Royal Society Research Grant
2015-2018 NSF grant DMS-1509141

PUBLICATIONS

- [1] Wrinkled fibrations on near-symplectic manifolds.
Geometry & Topology (2009). *arXiv:0712.2202*.
- [2] Heegaard Floer homology of broken fibrations over the circle.
Advances in Mathematics (2013). *arXiv:0903.1773*.
- [3] Examples of planar tight contact structures with support norm one (with T. Efgü).
IMRN (2010). *arXiv:0911.0470*.
- [4] Geometric compositions in quilted Floer theory (with M. Lipyanskiy).
Advances in Mathematics (2013). *arXiv:1003.4493*.
See also: Corrigendum, Adv. Math. 308 (2017), 1340–1345.
- [5] Milnor fillable contact structures are universally tight (with B. Ozbagci).
MRL (2010). *arXiv:1005.2385*.
- [6] Planar open books with four binding components.
Algebraic & Geometric Topology (2011). *arXiv:1008.3529*.
- [7] Fukaya categories of the torus and Dehn surgery (with T. Perutz).
Proceedings of National Academy of Sciences (PNAS) (2011). *arXiv:1102.3160*.
- [8] The symplectic topology of some rational homology balls (with M. Maydanskiy).
Commentarii Mathematici Helvetici (2014). *arXiv:1202.5625*.
- [9] Floer cohomology of \mathfrak{g} -equivariant Lagrangian branes (with J. Pascaleff).
Compositio Mathematica (2015). *arXiv:1310.8609*.
- [10] Floer cohomology of the Chiang Lagrangian (with J. Evans).
Selecta Mathematica (2015). *arXiv:1401.4073*.
- [11] A modular compactification of $\mathcal{M}_{1,n}$ from A_∞ -structures (with A. Polishchuk).
J. Reine Angew. Math. (Crelle) (2017) *arXiv:1408.0611*.
- [12] Koszul duality patterns in Floer theory (with T. Efgü).
Geometry & Topology. *arXiv:1502.07922*.
- [13] Arithmetic mirror symmetry for genus 1 curves with n marked points (with A. Polishchuk).
Selecta Mathematica (2017). *arXiv:1601.06141*.
- [14] Auslander orders over nodal stacky curves and partially wrapped Fukaya categories
(with A. Polishchuk)
Journal of Topology (2018), 11: 615–644. *arXiv:1705.06023*.
- [15] Embedding all contact 3-manifolds in a fixed contact 5-manifold (with J. Etnyre)
Journal of the London Mathematical Society (2018). *arXiv:1712.09642*.
- [16] Generating the Fukaya categories of Hamiltonian G -manifolds (with J. Evans).
Journal of the American Mathematical Society 32 (2019), 119–162. *arXiv:1507.05842*.

UNPUBLISHED

- [1] Broken Lefschetz fibrations, Lagrangian matching invariants and Ozsváth-Szabó invariants.
PhD Thesis, (2009) MIT (mostly subsumed into [1] and [2]).
- [2] Arithmetic mirror symmetry for the 2-torus (with T. Perutz).
Unpublished (mostly superseded by [11] and [13]). *arXiv:1211.4632*.
- [3] Associative Yang-Baxter equation and Fukaya categories of square-tiled surfaces (w. A. Polishchuk)
Submitted. *arXiv:1608.08992*.
- [4] Duality between Lagrangian and Legendrian invariants (with T. Ekhholm)
Submitted. *arXiv:1701.01284*.
- [5] Fukaya categories of plumbings and multiplicative preprojective algebras (with T. Efgü)
Submitted. *arXiv:1703.04515*.
- [6] Derived equivalences of gentle algebras via Fukaya categories (with A. Polishchuk)

Submitted. *arXiv:1801.06370*.

- [7] Homological mirror symmetry for K3 surfaces via moduli of A_∞ structures (with K. Ueda)
Preprint, 2018.
- [8] Homological mirror symmetry for symmetric products of punctured spheres. I (with A. Polishchuk)
Preprint, 2018.

INVITED TALKS

- Feb 2008, Geometry Seminar, MIT, Cambridge (MA)
Wrinkled fibrations on near-symplectic manifolds
- Apr 2008, Symplectic Geometry Seminar, Columbia University, New York (NY)
Wrinkled fibrations on near-symplectic manifolds
- May 2008, Gökova Geometry/Topology Conference, Gökova (Turkey)
Wrinkled fibrations on near-symplectic manifolds
- Nov 2008, Indiana-Illinois Symplectic Geometry Conference, Notre Dame Univ., Notre Dame (IN)
Wrinkled fibrations on near-symplectic manifolds
- Nov 2008, Geometry/Topology Seminar, USC, Los Angeles (CA)
Broken Lefschetz fibrations and Floer theoretical invariants
- Dec 2008, Geometry Topology Seminar, GaTech, Atlanta (GA)
Broken Lefschetz fibrations and Floer theoretical invariants
- Jan 2009, Symplectic Geometry Seminar, Columbia University, New York (NY)
Heegaard Floer homology of broken fibrations
- Mar 2009, Interactions of geometry and topology in low dimension, Banff (Canada)
Heegaard Floer homology of broken fibrations
- May 2009, Georgia International Topology Conference, Athens (GA)
Heegaard Floer homology of broken fibrations
- Jun 2009, Geometry Topology Seminar, Koç University, Istanbul (Turkey)
Heegaard Floer homology of broken fibrations
- Sep 2009, Symplectic Geometry Seminar, MSRI, Berkeley (CA) (2 lectures)
Lagrangian matching invariants and Heegaard Floer homology
- Apr 2010, Symplectic Geometry Seminar, Columbia University, New York (NY)
Lagrangian correspondences and three-manifold invariants
- Apr 2010, Symplectic Geometry Seminar, Stony Brook University, New York (NY)
Lagrangian correspondences and three-manifold invariants
- Apr 2010, Caltech-UCLA-USC Joint Geometry Seminar, Caltech, Pasadena (CA)
Lagrangian correspondences and three-manifold invariants
- Jun 2010, Gökova Geometry/Topology Conference, Gökova (Turkey)
Quilted Floer homology of three-manifolds
- Jul 2010, Workshop on Mirror Symmetry and Symplectic Geometry, MIT, Cambridge (MA)
Lagrangian correspondences and invariants of three-manifolds with boundary
- Oct 2010, Low dimensional topology seminar, MPIM, Bonn (Germany)
Quilted Floer homology of three-manifolds
- Oct 2010, Oberseminar Geometrie, MPI MiS, Leipzig (Germany)
Geometric composition in quilted Floer theory
- Dec 2010, Gauge theory and topology seminar, Harvard University, Cambridge (MA)
Fukaya categories of the torus and Dehn surgery on three-manifolds
- Jan 2011, Workshop on Symplectic and Contact Geometry, Uppsala (Sweden)
Fukaya categories of the torus and Dehn surgery on three-manifolds

- Feb 2011, Differential geometry seminar, University of Cambridge, Cambridge (UK)
Fukaya categories of the torus and Dehn surgery on three-manifolds
- Feb 2011, Geometry and topology seminar, University of Warwick, Coventry (UK)
Quilted Floer homology of three-manifolds
- Mar 2011, Symplectic topology seminar, University of Montréal, Montréal (Canada)
Fukaya categories of the torus and Dehn surgery on three-manifolds
- Apr 2011, Symplectic Geometry Seminar, Columbia University, New York (NY)
Fukaya categories of the torus and Dehn surgery on three-manifolds
- Jun 2011, Conference on Low-dimensional manifolds and high-dimensional categories,
University of California, Berkeley (CA)
Fukaya category of the once-punctured torus
- Jun 2011, Workshop on Homological Invariants in low-dimensional topology, Simons Center,
Stony Brook (NY)
Fukaya category of the once-punctured torus
- Jun 2011, Algebraic and Symplectic Geometry Seminar, University of Oxford, Oxford (UK)
Fukaya category of the once-punctured torus
- Sep 2011, Glasgow Geometry and Topology Seminar, University of Glasgow, Glasgow (UK)
Heegaard Floer homology of broken fibrations
- Nov 2011, Workshop on Circle-valued Morse theory and Alexander invariants, University of Tokyo,
Tokyo (Japan) (3 lectures)
Heegaard Floer homology of broken fibrations
- Nov 2011, Mathematics-String theory Seminar, IPMU, Kashiwanoha (Japan)
Fukaya category of the once-punctured torus
- Dec 2011, Symplectic Geometry Seminar, ETH, Zurich (Switzerland)
Fukaya category of the once-punctured torus
- Mar 2012, Geometry Seminar, UCL, London (UK)
Floer theoretically essential tori in rational blowdowns
- Mar 2012, Differential geometry Seminar, University of Cambridge, Cambridge (UK)
Floer theoretically essential tori in rational blowdowns
- Mar 2012, Geometric structures on manifolds, Banff (Canada)
Floer theoretically essential tori in rational blowdowns
- May 2012, Colloquium, Durham University, Durham (UK)
Symplectic topology of Stein manifolds
- May 2012, Gökova Geometry/Topology Conference, Gökova (Turkey)
Floer theoretically essential tori in rational blowdowns
- Jun 2012, Oberwolfach Workshop, Oberwolfach (Germany)
Floer theoretically essential tori in rational blowdowns
- Jul 2012, CAST Conference, Budapest (Hungary)
Symplectic topology of rational blowdowns
- Jul 2012, Workshop on holomorphic curves, Stanford University, Palo Alto (CA)
Symplectic topology of rational blowdowns
- Sep 2012, Geometry Seminar, Stony Brook University, Stony Brook (NY)
Arithmetic mirror symmetry for the 2-torus
- Oct 2012, Geometry, Symmetry and Physics Seminar, Rutgers University, New Brunswick (NJ)
Arithmetic mirror symmetry for the 2-torus

- Oct 2012, Geometry Topology Seminar, GaTech, Atlanta (GA)
The symplectic topology of some rational homology balls
- Nov 2012, Symplectic Geometry Seminar, Caltech, Pasadena (CA)
Arithmetic mirror symmetry for the 2-torus
- Nov 2012, Symplectic Geometry Seminar, IAS, Princeton (NJ)
Arithmetic mirror symmetry for the 2-torus
- Nov 2012, Symplectic Geometry Seminar, Columbia University, New York (NY)
Arithmetic mirror symmetry for the 2-torus
- Jan 2013, Special Colloquium, Rice University, Houston (TX)
Arithmetic mirror symmetry for the 2-torus
- Jan 2013, Departmental Colloquium, University of Illinois, Chicago (IL)
Arithmetic mirror symmetry for the 2-torus
- Jan 2013, Special Colloquium, University of California, San Diego (CA)
Arithmetic mirror symmetry for the 2-torus
- Feb 2013, Departmental Colloquium, University of Cambridge, Cambridge (UK)
Arithmetic mirror symmetry for the 2-torus
- Apr 2013, Geometry seminar, UCL, London (UK)
Arithmetic mirror symmetry for the 2-torus
- Apr 2013, Algebraic Geometry seminar, CUHK, Hong Kong (China) (3 lectures)
Arithmetic mirror symmetry for the 2-torus
- Sept 2013, Workshop on Mirror Symmetry and Cluster Algebras, Leeds (UK)
Equivariant Lagrangian branes and representations
- Oct 2013, Nantes-Orsay Seminar on symplectic and contact geometry, Nantes (FR)
Equivariant Lagrangian branes and representations
- Dec 2013, Geometry and Analysis Seminar, University of Oxford, Oxford (UK)
Floer cohomology and the Platonic solids
- Dec 2013, Differential geometry Seminar, University of Cambridge, Cambridge (UK)
Equivariant Lagrangian branes and representations
- Jan 2014, Geometry and Topology Seminar, Imperial College, London (UK)
Equivariant Lagrangian branes and representations
- Feb 2014, Symplectic Geometry Workshop, University of Warwick, Coventry (UK)
Floer cohomology and the Platonic solids
- Mar 2014, Geometry Seminar, University of Glasgow, Glasgow (UK)
Floer cohomology and the Platonic solids
- May 2014, Locally free geometry seminar, University of Amsterdam, Amsterdam (Netherlands)
On moduli of curves of genus 1 with n marked points
- July 2014, Geometry conference, National Cheng Kung University, Tainan (Taiwan)
Floer cohomology and the Platonic solids
- Sept 2014, Algebraic geometry seminar, UIC, Chicago (IL)
On moduli of curves of genus 1 with n marked points
- Sept 2014, Geometry, Topology and Dynamics seminar, UIC, Chicago (IL)
Equivariant Lagrangian branes and representations
- Oct 2014, Geometry/Physics Seminar, Northwestern University, Chicago (IL)
Equivariant Lagrangian branes and representations
- Oct 2014, Geometry/Physics Seminar, MIT, Cambridge (MA)

Equivariant Lagrangian branes and representations

- Feb 2015, Homotopy algebras Seminar, UIC, Chicago (IL)
Koszul duality patterns in Floer theory
- Mar 2015, Symplectic Geometry Seminar, Columbia University, New York (NY)
Koszul duality patterns in Floer theory
- Sep 2015, Workshop on Symplectic Topology and Geometry, Uppsala (Sweden)
Koszul duality patterns in Floer theory
- Oct 2015, Algebraic and Symplectic Geometry Seminar, Oxford (UK)
Generating the Fukaya categories of Hamiltonian G -manifolds
- Nov 2015, Geometry and Topology Seminar, Glasgow (UK)
Koszul duality patterns in Floer theory
- Nov 2015, Topology Seminar, Oxford (UK)
Koszul duality patterns in Floer theory
- Dec 2015, Conference on Mirror Symmetry and Symplectic Geometry, Kyoto (Japan)
Koszul duality patterns in Floer theory
- Dec 2015, Conference on Mirror Symmetry and Symplectic Geometry, Kyoto (Japan)
Generating the Fukaya categories of Hamiltonian G -manifolds
- Jan 2016, M-seminar, KSU, Manhattan (KS)
Koszul duality patterns in Floer theory
- Feb 2016, QMU Algebra seminar, London (UK)
Koszul duality patterns in Floer theory
- Mar 2016, Conference on Mirror Symmetry and Wall-Crossing, Berkeley (CA)
Generating the Fukaya categories of Hamiltonian G -manifolds
- Apr 2016, Conference on Symplectic Duality and Gauge Theory, Waterloo (Canada)
Koszul duality patterns in Floer theory
- Apr 2016, MIST Workshop, CUHK, Hong Kong (China)
Koszul duality patterns in Floer theory
- Apr 2016, MIST Workshop, CUHK, Hong Kong (China)
Generating the Fukaya categories of Hamiltonian G -manifolds
- Apr 2016, Symplectic Geometry Seminar, Stony Brook University, New York (NY)
A modular compactification of $\mathcal{M}_{1,n}$ from A_∞ structures and mirror symmetry for marked tori
- May 2016, Geometry and Physics Seminar, IBS, Pohang (Korea)
Koszul duality patterns in Floer theory
- May 2016, Geometry and Physics Seminar, IBS, Pohang (Korea)
Generating the Fukaya categories of Hamiltonian G -manifolds
- Jun 2016, Symplectic Topology, Sheaves and Mirror symmetry Conference, Jussieu, Paris (France)
Associative Yang-Baxter equation and the Fukaya categories of square-tiled surfaces
- July 2016, Workshop on Symplectic Field Theory VIII, Berlin (Germany)
A canonical basis of representations via Floer theory
- Aug 2016, Workshop on Algebra, Combinatorics and Dynamics, Belfast (Northern Ireland)
Associative Yang-Baxter equation and the Fukaya categories of square-tiled surfaces
- Oct 2016, Geometry seminar, Uppsala (Sweden)
Duality between Legendrian and Lagrangian invariants
- Nov 2016, Algebra seminar, University of Warwick, Coventry (UK)
A canonical basis of representations via Floer theory

- Nov 2016, Workshop on Symplectic Geometry, Università Degli Studi di Milano, Milan (Italy)
Floer cohomology and the Platonic solids
- Jan 2017, UK-Japan Winter School, University College London (UK)
Duality between Lagrangian and Legendrian invariants
- Mar 2017, EDGE Seminar, University of Edinburgh, Edinburgh (UK)
Fukaya categories of plumbings and multiplicative preprojective algebras
- Apr 2017, Geometry Seminar, University of Cambridge, Cambridge (UK)
Shut up and calculate (Fukaya categories)
- Jun 2017, Low dimensional topology on Skye, Isle of Skye (UK)
Mirror symmetry for punctured surfaces and Auslander orders
- Jul 2017, Conference on Floer homology and homotopy theory, UCLA (CA)
Duality between Lagrangian and Legendrian invariants
- Jul 2017, Conference on symplectic and algebraic geometry, University of Warwick, Coventry (UK)
Mirror symmetry for punctured surfaces and Auslander orders
- Aug 2017, Conference on symplectic topology, Mittag-Leffler Institute (Sweden)
Mirror symmetry for punctured surfaces and Auslander orders
- Nov 2017, Workshop on symplectic geometry and representation theory, Hausdorff Institute of Mathematics (Germany) (4 lectures)
Fukaya categories and their appearance in representation theory
- Mar 2018, Geometry and Topology Seminar, Imperial College, London (UK)
Homological mirror symmetry for K3 surfaces via moduli of A_∞ structures
- Mar 2018, Conference on mirror symmetry and enumerative geometry, Berkeley (CA)
Homological mirror symmetry for K3 surfaces via moduli of A_∞ structures
- Oct 2018, Conference on representation theory of finite-dimensional algebra (Mexico) (2 lectures)
Fukaya categories and gentle algebras
- Nov 2018, Conference on Noncommutative deformations, IPMU, Kashiwanoha (Japan)
Homological mirror symmetry for higher dimensional pants

PHD STUDENTS Doğancan Karabaş (Jan 2016 - Dec 2018) Thesis title: Microlocal sheaves on Pinwheels
 Yin Li (Started on Oct 2017)
 Matthew Habermann (Started on May 2018)

TEACHING
 EXPERIENCE

Graduate class, Algebraic curves, Winter (2018) (22 lectures), King's College London
 Graduate class, Algebraic curves, Winter (2017) (22 lectures), King's College London
 Undergraduate class, Prime numbers, Spring 2017 (12 lectures), King's College London
 Undergraduate class, Prime numbers, Winter 2016 (12 lectures), King's College London
 Graduate class, Topics in Representation theory, Spring 2015 (42 lectures), UIC
 Graduate class, Algebraic Topology, Fall 2014 (42 lectures), UIC
 Undergraduate class, Game theory, Winter 2014 (12 lectures), King's College London
 Graduate class, Symplectic topology of Stein manifolds, Lent 2013 (20 lectures), Cambridge.
 Undergraduate supervisions, Geometry, King's College, Lent 2012 , University of Cambridge.
 Undergraduate supervisions, Galois theory, King's College, Michaelmas 2011 , University of Cambridge.
 Undergraduate supervisions, Geometry, King's College , Lent 2011 , University of Cambridge.
 Undergraduate class, Single variable calculus (18.01), Winter 2009, MIT.
 Teaching Assistant/Recitation Instructor, Linear Algebra, Fall 2007, MIT.
 Research advisor, Summer 2006, RSI, MIT. Subject: Enumerative Tropical Geometry.
 Students:
 Ping Fung Ng (received one of the top ten commendations for his research at MIT).
 Yasin Razlik

Teaching Assistant, Algebraic Geometry, Fall 2006, MIT.

OTHER
PROFESSIONAL
ACTIVITIES

Refereeing:

Serve regularly as a referee for various journals including Geom. Topol., Selecta Math., Comp. Math., J. of Topology, Duke Math. J., GAFA, Invent. Math., J. of Symp. Geom.

Served as a referee for the PhD defense of Dmitry Tonkonog (Cambridge), Marco Marengon (Imperial), Alexandru Cioba (UCL).

Conference/Seminar Organization:

Symplectic Cut Seminar, King's College London, 2015–.

Co-organizer of KCL\UCL geometry seminar, 2016–

Mathematics of String Theory (MOST) 2014, Conference, King's College London.

Co-organized the Geometry, Topology and Dynamics Seminar, 2014-2015, UIC.

Co-organized the Homotopy algebras Seminar, 2014-2015, UIC.

Admissions Committee:

Interviewed prospective undergraduates for admission to King's College, University of Cambridge.

Interviewed prospective graduate students for admission to London School of Geometry and Topology (King's College London, University College London, Imperial College London) 2014 & 2016.

Served as a member of the tenured/tenure-track faculty hiring committee, 2014-2015, UIC.

Postgraduate admissions committee, King's College London. 2016-2018.