

# Prof. András Juhász

*Royal Society Research Fellow and Professor of Mathematics*

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## Education

PhD Mathematics, Princeton University, 3 June 2008

*Supervisor:* Zoltán Szabó

*Dissertation:* Floer homology and surface decompositions

MSc (with Honours) Mathematics, Eötvös Loránd University of Budapest, 2004

## Research interests

Differential and low-dimensional topology, in particular Heegaard Floer homology, knot theory, contact and symplectic topology, and global singularity theory.

## Professional History

- 2017– Full Professor, Mathematical Institute, University of Oxford
- 2013–2017 Royal Society University Research Fellow and Associate Professor  
Mathematical Institute, University of Oxford
- 2013– Tutorial Fellow  
Keble College, Oxford
- 2012–2013 Royal Society University Research Fellow and Senior Lecturer  
Department of Mathematics, Imperial College London
- 2011–2012 Royal Society University Research Fellow  
DPMMS, University of Cambridge
- 2008–2012 Non-Stipendiary Junior Research Fellow  
King's College, Cambridge
- 2008–2011 Herchel Smith Postdoctoral Research Fellow  
DPMMS, University of Cambridge

## Visiting positions

- 2017 January–June, Newton Institute, Cambridge, UK
- 2013 July 22–August 23, Rényi Institute, Hungary
- 2013 May 13–25, Simons Center for Geometry and Physics, USA
- 2010 January and March, Mathematical Sciences Research Institute, USA
- 2008 September–October, Rényi Institute, Hungary
- 2008 August, Princeton University, USA
- 2008 July and 2009 March–April, Institute des Hautes Études Scientifiques, France

## Awards/scholarships

- 2008 Géza Grünwald Memorial Prize  
(awarded by the János Bolyai Mathematical Society to outstanding researchers under the age of 30)
- 2005 Pro Scientia Gold Medal  
(awarded by the Hungarian Ministry of Education biennially to 45 recent graduates in all subjects for original research)
- 2002/03, 2003/04 Scholarship of the Republic of Hungary
- 2003 Kató Rényi Memorial Prize, First Category  
(awarded by the János Bolyai Mathematical Society for original research conducted before graduation)
- 2003 Outstanding Student of the Faculty of Science,  
Eötvös Loránd University of Budapest
- 2001 Third prize in the Schweitzer Mathematical Competition
- 1998 Metropolis Prize  
(for winning the contest of the Mathematical and Physical Journal for Secondary Schools 6 consecutive years)

## Funding secured

- 2016–2021 ERC Starting Grant, 1.49 million Euros (PI)  
(postdoctoral research fellows: Bruce Bartlett (July–August 2016), André Henriques (July 2016–June 2017), Daniele Celoria (September 2016–August 2019), Marco Golla (September–December 2017))
- 2016–2019 Royal Society University Research Fellowship Extension (PI), £360,854
- 2011–2016 Royal Society University Research Fellowship (PI), £534,206
- 2011–2014 EPSRC Postdoctoral Fellowship (PI), declined
- 2010–2015 Lendület Grant, Hungarian Academy of Sciences (co-applicant)
- 2010–2014 Hungarian Scientific Research Fund grant NK81203 (co-applicant)
- 2006–2010 Hungarian Scientific Research Fund grant T49449 (co-applicant)
- 2002–2006 Hungarian Scientific Research Fund grant T037735 (co-applicant)

## Invited seminar lectures

- 2017 IST Austria
- 2017 Université Libre de Bruxelles, Belgium
- 2016 University of Oxford, UK
- 2016 King's College London, UK
- 2015 University of Glasgow, UK
- 2015 Complexity Cluster, Keble College, UK
- 2014 University of Oxford, UK
- 2014 Rényi Institute, Budapest, Hungary
- 2013 University of Oxford, UK
- 2013 University of Cambridge, UK
- 2013 University of Oxford, UK
- 2012 University of Cambridge, UK

2012 Imperial College, London, UK  
 2012 University of Warsaw, Poland  
 2011 University of Cambridge, UK  
 2011 Université Libre de Bruxelles, Belgium  
 2010 University of Oxford, UK  
 2010 University of Warwick, UK  
 2010 Kyushu University, Japan  
 2010 Kyoto University, Japan  
 2010 Hungarian Academy of Sciences  
 2010 Rényi Institute, Budapest, Hungary  
 2010 Imperial College, London, UK  
 2009 Rényi Institute, Budapest, Hungary  
 2009 Transpennine Topology Triangle, Sheffield, UK  
 2009 University of Oxford, UK  
 2009 Paris VII, France  
 2009 University of Nantes, France  
 2009 Paris VII, France  
 2009 University of Glasgow, UK  
 2008 University of Warwick, UK  
 2008 University of Cambridge, UK  
 2008 Rényi Institute, Budapest, Hungary  
 2008 MIT, Cambridge MA, USA  
 2008 Columbia University, New York, USA  
 2008 MIT, Cambridge MA, USA  
 2007 Purdue University, West Lafayette, USA  
 2007 SUNY Stony Brook, USA  
 2007 Princeton University, Princeton, USA  
 2006 USC, Los Angeles, USA  
 2006 Columbia University, New York, USA  
 2006 UQAM, Montreal, Canada

### Invited conference lectures

2018 Topological Quantum Field Theory and Categorification  
 Institute d'Études Scientifiques de Cargèse, France  
 2017 3-manifold workshop  
 Isaac Newton Institute, Cambridge, UK  
 2016 3-manifolds and Floer theories  
 University of Regensburg, Germany  
 2016 ECSTATIC  
 Imperial College, London, UK  
 2014 Low Dimensional Topology  
 Hungarian Academy of Sciences, Budapest, Hungary  
 2014 Workshop of the British Mathematical Colloquium  
 Queen Mary University, London, UK  
 2013 Low Dimensional Topology

- Simons Center, Stony Brook, NY
- 2013 Swiss Knots  
Bern, Switzerland
- 2012 CAST Summer School and Conference  
Rényi Institute, Budapest, Hungary
- 2012 Invariants in Low-Dimensional Topology and Knot Theory  
Oberwolfach, Germany
- 2010 William Rowan Hamilton Geometry and Topology Workshop  
Trinity College, Dublin, Ireland
- 2010 Intelligence of Low-dimensional Topology  
RIMS, Kyoto University, Japan
- 2010 Singularity theory for spatial cognition, Ise, Japan
- 2010 Tambara Workshop (series of two talks), Tambara Institute  
of Mathematical Sciences, Japan
- 2010 Knots, Contact Geometry and Floer Homology  
University of Tokyo, Japan
- 2010 Introductory Workshop: Homology theories of knots and links  
(series of two talks), MSRI, Berkeley CA
- 2009 Summer School: Link Homology, IHP, Paris, France
- 2009 Sixteenth Gökova geometry/topology conference, Gökova, Turkey
- 2008 3-manifolds and contact topology, Budapest, Hungary
- 2008 Low Dimensional Topology, MSRI, Berkeley CA
- 2007 Georgia Topology Conference, Athens GA

## Contributed conference talks

- 2006 Spring Topology and Dynamics Conference, Greensboro NC
- 2005 5th International Siegen Topology Symposium, Siegen, Germany
- 2003 Workshop on Singularity Theory, Edinburgh, UK

## Public lectures and Outreach

- 2018 Research case study, available at <https://www.maths.ox.ac.uk/node/28079>
- 2015 Fazekas Mihály High School
- 2015 Oxford Hungarian Society

## Teaching Experience

### *Lecture Courses*

- 2016 Michaelmas Term, Graduate Course “Khovanov homology detects the unknot”  
University of Oxford
- 2014 Hilary Term, Poincare Seminar  
University of Oxford
- 2013 Summer Term, First Year Poster Project  
Imperial College London
- 2013 Spring Term, Graduate course “Introduction to Heegaard Floer homology”

Imperial College London  
 2011 Easter Term, Graduate course “Foliations on three-manifolds”  
 University of Cambridge  
 2008 Fall, Graduate course “Foliations on three-manifolds”  
 Rényi Institute, Budapest  
 2007 Spring, MAT 102 Calculus, Princeton University  
 2006 Fall, MAT 104 Calculus, Princeton University

### *Classes, Supervisions, and Tutorials*

2018 Trinity Term, *Groups and Group Actions, Graph Theory*, University of Oxford  
 2018 Hilary Term, *Linear Algebra II, Groups and Group Actions*, University of Oxford  
 2017 Michaelmas Term, *Geometry, Linear Algebra*, University of Oxford  
 2017 Trinity Term, *Groups and Group Actions, Graph Theory, Introduction to Manifolds*, University of Oxford  
 2017 Hilary Term, on sabbatical  
 2016 Michaelmas Term, *Introduction to Complex Numbers, Introduction to University Mathematics, Geometry, Linear Algebra*, University of Oxford  
 2016 Trinity Term, *Graph Theory*, University of Oxford  
 2016 Hilary Term, *Topology, Algebra 2 - Rings and Modules*, University of Oxford  
 2015 Michaelmas Term, *Linear Algebra, Geometry*, University of Oxford  
 2015 Trinity Term, *Graph Theory*, University of Oxford  
 2015 Hilary Term, *Topology, Algebra 2 - Rings and Modules*, University of Oxford  
 2014 Michaelmas Term, *Metric Spaces and Complex Analysis, Geometry*, University of Oxford  
 2014 Trinity Term, *Projective Geometry, Graph Theory*, University of Oxford  
 2014 Hilary Term, *Topology, Algebra 2 - Rings and Modules*, University of Oxford  
 2013 Michaelmas Term, *Metric Spaces and Complex Analysis, Introductory Calculus, Geometry*, University of Oxford  
 2011 Michaelmas Term, *Groups* supervisions, University of Cambridge  
 2009, 2010 Michaelmas Term, *Linear Algebra* supervisions, University of Cambridge  
 2009 Lent Term, *Analysis I* supervisions, University of Cambridge  
 2008 Michaelmas Term, *Algebraic Topology* supervisions, University of Cambridge  
 2002, 2003 *Algebraic Topology* classes, Eötvös Loránd University  
 2001 *Vector Geometry* classes, Eötvös Loránd University

### *Masters students supervised*

2013 July–August, Grégory Boil (intern from ENS de Cachan)  
 2011–12 Juan Ojeda-Santana (Cambridge Part III)

### *PhD Students Supervised*

2017– Peter Banks  
 2015– Sungkyung Kang  
 2015–2016 Fyodor Gainullin (co-supervised by Dorothy Buck)  
 2013–2017 Marco Marengon (currently a postdoctoral researcher at UCLA)  
 2010–2013 Irida Altman (co-supervised by Saul Schleimer)

## Administration

1 October 2016 – 30 September 2019, Academic Committee, Keble College  
 2015 Hilary Term – present, Co-organizer of the Oxford Topology Seminar  
 2014 Michaelmas Term, Selection Committee for Associate Professorship of Statistics with Tutorial Fellowship, University of Oxford  
 2014 Trinity Term, Selection Committee for RFT at Keble College  
 2014 Michaelmas Term – 2016 Trinity Term, Director of Studies, Keble College  
 2014– DPhil interviews, University of Oxford  
 2014 Hilary Term, Co-organizer of Poincaré Seminar, University of Oxford  
 2013 Selection Committee for Chapman Fellowship, Imperial College London  
 2011–2012 Initiating and co-organizing Cambridge Topology Seminar  
 2011 Michaelmas Term, Part IA Director of Studies, King’s College Cambridge  
 2009–2011 Undergraduate admissions interviewer, King’s College Cambridge

## Services

1 January 2016 – present, Panel Member of the Royal Society International Exchanges Scheme  
 1 January 2014 – present, Editorial Advisor for the Proceedings, Journal, Bulletin, and Transactions of the London Mathematical Society  
 Referee for *Advances in Mathematics*, *Duke Mathematical Journal*, *European Journal of Mathematics*, *Topology*, *Mathematical Research Letters*, *Geometry and Topology*, *Journal of Topology*, *Algebraic and Geometric Topology*, *Journal of Knot Theory and its Ramifications*, *Turkish Journal of Mathematics* and *International Mathematical Research Notices*, EPSRC, OTKA, Isaac Newton Institute  
 Reviewer for *Mathematical Reviews* and *Zentralblatt MATH*  
 External Ph.D. examiner: Vera Vértési (Eötvös Loránd University), Duncan McCoy (University of Glasgow), Claudius Zibrowius (University of Cambridge)  
 Internal Ph.D. examiner: Marco Golla (University of Cambridge), Julian Gibbons (Imperial College London), Hemanth Saratchandran (University of Oxford)  
 Early and Late Stage Review: Fyodor Gainullin (Imperial College London), Thomas Hockenhull (Imperial College London)  
 Confirmation of Status: Hemanth Saratchandran (University of Oxford)  
 Transfer of Status: Simon Bergant (University of Oxford)

## Professional Development

2016 Recruitment and Selection Briefing, University of Oxford  
 2014 ORA Workshop, Mathematica Institute, University of Oxford  
 2013 Online Tutored Admissions Course, University of Oxford  
 2013 Introduction to Academic Practice at Oxford, University of Oxford  
 2013 Recruitment and Selection Briefing, Imperial College London  
 2012 Introduction to Teaching for Learning, Imperial College London  
 2012 Month One Safety Training, Imperial College London  
 2009 Supervising Graduate Students: Workshops for Supervisors  
 University of Cambridge

## List of Publications

Citations: 501 (Google Scholar), 180 by 97 authors (MathSciNet).

Below I use data from Google Scholar.

(i) Refereed papers in primary journals:

1. Computing cobordism maps in link Floer homology and the reduced Khovanov TQFT.

(with M. Marengon)

*Selecta Mathematica* **24** (2018), no. 2, 1315–1390.

<http://arxiv.org/abs/1503.00665>

(4 citations)

2. Defining and classifying TQFTs via surgery.

To appear in *Quantum Topology*, 95 pp.

<http://arxiv.org/abs/1408.0668>

(8 citations)

3. “Appendix: Algorithmic detection of alternating links” in “Alternating links and definite surfaces” by J. Greene

(with M. Lackenby)

*Duke Mathematical Journal* **166** (2017), no. 11, 2133–2151.

<http://arxiv.org/abs/1511.06329>

4. Concordance maps in knot Floer homology.

(with M. Marengon)

*Geometry and Topology* **20** (2016), 3623–3673.

<http://dx.doi.org/10.2140/gt.2016.20.3623>

(9 citations)

5. Cobordisms of sutured manifolds and the functoriality of link Floer homology.

*Advances in Mathematics* **299** (2016), 940–1038.

<http://dx.doi.org/10.1016/j.aim.2016.06.005>

(32 citations)

6. Sutured Floer homology, fibrations and taut depth one foliations.

(with I. Altman and S. Friedl)

*Transactions of the American Mathematical Society* **368** (2016), no. 9, 6363–6389.

<http://dx.doi.org/10.1090/tran/6610>

(2 citations)

7. On sutured Floer homology and the equivalence of Seifert surfaces.

(with M. Hedden and S. Sarkar)

*Algebraic and Geometric Topology* **13** (2013), 505–548.

<http://msp.org/agt/2013/13-1/p16.xhtml>

(14 citations)

8. Sutured Floer homology and hypergraphs.

(with T. Kálmán and J. Rasmussen)

*Mathematical Research Letters* **19** (2012), no. 6, 1309–1328.

<http://dx.doi.org/10.4310/MRL.2012.v19.n6.a11>  
(4 citations)

9. The decategorification of sutured Floer homology.  
(with S. Friedl and J. Rasmussen)  
*Journal of Topology* **4** (2011), no. 2, 431–478.  
<http://jtopol.oxfordjournals.org/content/4/2/431>  
(37 citations)

10. The sutured Floer homology polytope.  
*Geometry and Topology* **14** (2010), no. 3, 1303–1354.  
<http://www.msp.warwick.ac.uk/gt/2010/14-03/p030.xhtml>  
(32 citations)

11. Knot Floer homology and Seifert surfaces.  
*Algebraic and Geometric Topology* **8** (2008), no. 1, 603–608.  
<http://www.msp.warwick.ac.uk/agt/2008/08-01/p020.xhtml>  
(10 citations)

12. Floer homology and surface decompositions.  
*Geometry and Topology* **12** (2008), no. 1, 299–350.  
<http://www.msp.warwick.ac.uk/gt/2008/12-01/p007.xhtml>  
(96 citations)

13. Holomorphic discs and sutured manifolds.  
*Algebraic and Geometric Topology* **6** (2006), 1429–1457.  
<http://www.msp.warwick.ac.uk/agt/2006/06/p052.xhtml>  
(170 citations)

14. A geometric classification of immersions of 3-manifolds into 5-space.  
*Manuscripta Mathematica* **117** (2005), no. 1, 65–83.  
<http://www.springerlink.com/content/m501t73j6t2v1857/>  
(6 citations)

15. Regular homotopy classes of singular maps.  
*Proceedings of the London Mathematical Society* **90** (2005), no. 3, 738–762.  
<http://plms.oxfordjournals.org/cgi/content/abstract/90/3/738>  
(4 citations)

16. Regular homotopy classes of locally generic mappings.  
*Topology and its Applications* **138** (2004), no. 1-3, 45–59.  
<http://www.sciencedirect.com/science/journal/01668641>  
(5 citations)

(ii) Contributions to symposia and compiled volumes:

17. A survey of Heegaard Floer homology.  
*New Ideas in Low Dimensional Topology*, World Scientific (2014), 237–296.  
[http://www.worldscientific.com/doi/abs/10.1142/9789814630627\\_0007](http://www.worldscientific.com/doi/abs/10.1142/9789814630627_0007)



(14 citations)

(iii) Abstracts and short papers:

18. Problems in sutured Floer homology.  
*Intelligence of Low-Dimensional Topology*,  
 RIMS Kôkyûroku **1716** (2010), 136–137.  
<http://www.kurims.kyoto-u.ac.jp/~ildt/2010/prob2010.pdf>  
 (2 citations)

(iv) Preprints and submitted papers:

19. Distinguishing slice disks using knot Floer homology  
 (with I. Zemke)  
 Preprint (2018), 5 pp.

20. Concordance surgery and the Ozsváth–Szabó 4-manifold invariant  
 (with I. Zemke)  
 Preprint (2018), 14 pp.  
<http://arxiv.org/abs/1804.06221>

21. Contact handles, duality, and sutured Floer homology  
 (with I. Zemke)  
 Preprint (2018), 73 pp.  
 Submitted to *Geometry and Topology*  
<http://arxiv.org/abs/1803.04401>

22. Functoriality of the EH class and the LOSS invariant under Lagrangian concordances.  
 (with M. Golla)  
 Preprint (2018), 13 pp.  
 Submitted to *Bulletin of the London Mathematical Society*  
<http://arxiv.org/abs/1801.03716>

23. Spectral order for contact manifolds with convex boundary.  
 (with S. Kang)  
 Preprint (2016), 16 pp.  
 Submitted to *Algebraic and Geometric Topology*.  
<http://arxiv/abs/1601.05602>  
 (1 citation)

24. Naturality and mapping class groups in Heegaard Floer homology.  
 (with D. Thurston)  
 Preprint (2012), 130 pp.  
 Submitted to *Memoirs of the American Mathematical Society*.  
<http://arxiv.org/abs/1210.4996>.  
 (45 citations)

(v) In preparation:

25. Coherent orientations in Heegaard Floer homology

(with P. Ghiggini)

(vi) Translations:

26. Graphs and matrices by Dénes König  
Translated from Hungarian, Preprint (2017)

## References

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