HÜLYA ARGÜZ

Contact Information	Dr. Nurömür Hülya Argüz University of Georgia Department of Mathematics Boyd Research and Education, Room 318 Athens, GA 30602 / USA Hulya.Arguz@uga.edu

Personal Information

⋄ Nationality: Germany

Employment

University of Georgia — 08.2022- current
Assistant Professor

Université de Versailles / Paris–Saclay — 10.2019-09.2021
Postdoctoral laureate of Fondation Mathématiques Jacques Hadamard
Mentor: Dimitri Zvonkine

Imperial College London — 01.2017-09.2019
Postdoctoral research associate
PI: Tom Coates

Short Term Positions

Institute of Science and Technology Austria — 10.2021-07.2022
Postdoctoral fellow
Tamàs Hausel group

University of Cambridge, UK — 01.2018-03.2018
Visiting fellow
Collaborator: Mark Gross

IAS School, Princeton, USA — 09.2016-12.2016
Postdoctoral member
Mentor: Paul Seidel and Mohammed Abouzaid

Education

University of Hamburg, Germany

Ph.D., Mathematics, 16.08.2016
- Thesis title: *Log geometric techniques for open invariants in mirror symmetry.*
- Advisor: Bernd Siebert

M.Sc., Mathematics, 28.03.2013
- Thesis title: *Lagrangian submanifolds in Kato-Nakayama spaces.*
- Advisor: Bernd Siebert

Middle East Technical University, Turkey

M.Sc., Mathematics, 2011, with Honours

B.Sc., Mathematics, 2008, with Honours

Papers	
	1. H. Argüz, P. Bousseau: "Quivers, Flow Trees, and Log Curves", 61 pages, arXiv:2302.02068, submitted.

1. H. Argüz, P. Bousseau: "Quivers, Flow Trees, and Log Curves", 61 pages, arXiv:2302.02068, submitted.

2. H. Argüz, P. Bousseau: "Fock-Goncharov dual cluster varieties and Gross-Siebert mirrors", 54 pages, arXiv:2206.10584, submitted.

3. H. Argüz, P. Bousseau, R. Pandharipande, D. Zvonkine: Gromov–Witten Invariants of Complete Intersections, 90 pages, arXiv:2109.13323, **Journal of Topology**, Volume 16, Issue 1, pg 264-343, 2023.

4. H. Argüz: Mirror symmetry for log Calabi–Yau pairs via the heart of canonical wall structures, 40 pages, arXiv:2109.08664, to appear in the **Mathematical Proceedings of the Cambridge Philosophical Society**, (2023).

5. H. Argüz, P. Bousseau: The flow tree formula for Donaldson-Thomas invariants of quivers with potentials, 50 pages, arXiv:2102.11200, **Compositio Mathematica**, 158 (12), pg. 2206-2249, (2022).

6. H. Argüz, M. Gross: The higher dimensional tropical vertex, 90 pages, arXiv:2007.08347, **Geometry & Topology** 26-5, pg: 2135-2237, (2022).

7. H. Argüz: Mirror symmetry for the Tate curve via tropical and log corals, 73 pages, arXiv:1712.10260, **Journal of the London Mathematical Society**, http://doi.org/10.1112/jlms.12515, (2022).

8. H. Argüz, P. Bousseau: Real log curves in toric varieties, tropical curves, and log Welschinger invariants, arXiv:2004.05124, **Annales de l'institut Fourier**, Volume 72, pg. 1547-1620 (2022).

9. H. Argüz: Real loci in (log-) Calabi-Yau manifolds via Kato-Nakayama spaces of toric degenerations, arXiv:1610.07195 , **European Journal of Mathematics**, 7(3), 869-930, (2021).

10. H. Argüz, T. Prince: A Note on Schoen's Calabi–Yau Threefolds, arXiv:1807.10172, **Rendiconti del Seminario Matematico Torino**, Vol. 79, 1, 15-20, (2021).

11. H. Argüz, T. Prince: On the cohomology groups of real Lagrangians in Calabi-Yau threefolds, 32 pages, arXiv:2002.03957, **Experimental Mathematics**, https://doi.org/10.1080/10586458.2021.1926006, (2021).

12. H. Argüz, T. Prince: Real Lagrangians in Calabi-Yau Threefolds, arXiv:1908.06685, **Proceedings of the London Mathematical Society** 121(2), pg. 287-311, (2020).

13. H. Argüz, M. Kalafat, Y. Ozan: Self dual metrics on non-simply connected 4-manifolds, **Journal of Geometry and Physics**, Volume 64, pg 79-82, (2013).

14. H. Argüz, M. Kalafat: Complex and symplectic structures on Panelled Web 4-manifolds, **Topology and its Applications**, 159, no:8, pg 2169-2173, (2012).

Publications in peer-reviewed conference proceedings, reports, and thesis

15. H. Argüz: The Quantum Mirror to the Quartic del Pezzo Surface, 6 pages, arXiv:2112.09082, **Springer Proceedings in Mathematics and Statistics, 396**, Lie Theory and Its Applications in Physics, ISBN-13: 9789811947506, (2022).

16. H. Argüz: Topological torus fibrations on Calabi–Yau manifolds via Kato–Nakayama spaces, arXiv:2003.11589, **Proceedings of GGT, Gökova Geometry Topology Conferences 2018/2019**, International Press, pg. 176-201, (2021).

17. H. Argüz, (2019): Toric degenerations and tropical enumeration of real curves with Welschinger signs, **Oberwolfach reports** 27/2019 DOI: 10.4171/OWR/2019/27, 45-47.

18. H. Argüz, (2015): Floer theory for the Tate curve via tropical geometry, **Oberwolfach reports** no 23/2015, DOI: 10.4171/OWR/2015/23, 1290-1293.

19. H. Argüz, (2016): Log-geometric techniques for open invariants in mirror symmetry. **PhD thesis, University of Hamburg**, http://ediss.sub.uni-hamburg.de/

20. H. Argüz, (2013): Real Lagrangians in Kato–Nakayama spaces. **MSc thesis, University of Hamburg**, available at departmental library.

HONORS AND
AWARDS

◇ European Commision Marie-Curie grant, global fellowship scheme. Hosts: Brown University and Universität Leiden, 253052 Euros (declined when moving to the US on a tenure-track position, 2021).

◇ Junior fellowship, Institut Mittag–Leffler, Sweden, 30000 SEK, (2020).

◇ Postdoctoral Laureate, Fondation Mathématiques Jacques Hadamard, (2019-2021).

◇ Conference organisation grants from the London Mathematical Society, The Heilborn Institute, and the Fondation Compositio Mathematica, to organize the conference on "New Perspectives on SYZ Mirror Symmetry" at Imperial College, 10000 GBP, (2020).

◇ Institute for Advanced Studies, postdoctoral funding through NSF, $25.000, 9/2016-12/2016.

◇ PhD scholarship, RTG 1670 funded by DFG, 2013-2016.

◇ Qualification Scholarship, RTG 1670 funded by DFG, (2012-2013).

◇ Finalist at the Fame Lab Competition, organized by the British Council, for communicating "Calculus" to the public on a national TV channel, (2007).

◇ Money Award for ranking as 7'th among half a million students in the yearly national high school entrance examination in Turkey (2000).

INVITED TALKS AT
INTERNATIONAL
CONFERENCES AND
WORKSHOPS

1. Conference on "Homological Mirror Symmetry" MSA University of Miami, **Miami, United States**.

2. 01/2023 "AMS Joint Math Meetings", Special Session on Excursions in Arithmetic Geometry II, **Boston, United States**.

3. 11/2022 "Kansas Geometry Days 2022", **Kansas, United States**.

4. 11/2022 "Annual Meeting of the Simons Collaboration on Homological Mirror Symetry", **NYC, United States**.

5. 09/2022 "Quivers, representation theory and physics", **Cologne, Germany**.

6. 04/2022 "StringMath", parallel session **Warsaw, Poland**.

7. 07/2022 "Workshop on Quantum Geometry", **IHÉS, France**.

8. 04/2022 "Workshop on Quivers, Calabi–Yau Threefolds and DT Invariants", **Jussieu, France**.

9. 04/2022 "Conference on Recent Advances on Moduli Spaces of Curves", **Leysin, Switzerland**.

10. 11/2021 "Journés Géométrie Algébrique et Géométrie Complexe á Angers", **Angers, France**.

11. 10/2021 "Oberwolfach workshop: New Techniques on Resolution of Singularities", **Oberwolfach, Germany**.

12. 09/2021 Annual workshop of 3CinG (Classification, Computation, and Construction), **Warwick, UK**.

13. 09/2021, "Tropical geometry and Singularities", **Lille, France**.

14. 06/2021 "XIV. International Workshop Lie Theory and Its Applications in Physics", Sofia, Bulgaria, **online**.

15. 06/2021 "Summer School of the ANR on Symplectic, Real, and Tropical Aspects of Enumerative Geometry", **le Croisic, France**.

16. 01/2021 "Joint Mathematics Meetings of American Mathematical Society", Special Session on Arithmetic and Algebraic Geometry, **online**.

17. 09/2020 "Workshop on Floer-theoretic and algebro-geometric aspects of SYZ mirror symmetry", Simons Collaboration on Homological Mirror Symmetry, **online**.

18. 12/2020 "FRG Workshop on Moduli Spaces and Stability", http://homepages.math.uic.edu/ coskun/frg2020.html, **online**.

19. 02/2020, Kyoto University, "The 5'th KTGU Mathematics Workshop for Young Researchers ", **Kyoto, Japan**.

20. 06/2019, Oberwolfach, "Workshop on Logarithmic Algebraic Geometry", **Oberwolfach, Germany**.

21. 03/2019, University of Loughborough, "Geometry and Physics Workshop", **Loughborough, UK**.

22. 02/2019, University of Freiburg, "Fourth Meeting for Young Women in Mathematics", **Freiburg, Germany**.

23. 10/2018, KIAS, "Matrix Factorizations and Mirror Symmetry", **Seoul, South Korea**.

24. 06/2018, "57th Annual Georgia Topology Conference", **Georgia, USA**.

25. 03/2018, Institut Mittag-Leffler, "Tropical Geometry", **Djursholm, Sweden**.

26. 02/2018, GLEN British "Algebraic Geometry Meeting", **Sheffield, UK**.

27. 12/2017, Higher School of Economics, "Conference on Mirror Symmetry and Related Topics", **Moscow, Russia**.

28. 08/2017, IBS Center for Geometry and Physics "Pacific Rim Conference on Complex and Symplectic Geometry", **Pohang, South Korea**.

29. 04/2015, Oberwolfach workshop on "Tropical Aspects in Geometry, Topology and Physics", **Oberwolfach, Germany**.

30. 11/2022, Seminar on Clusters and Braids, organized by Misha Gorsky and José Simental **online**.

31. 06/12/2021, Colloquium talk at the University of Oklahoma, held online, **Oklahoma, USA**.

32. 06/12/2021, Colloquium talk at the University of Oklahoma, held online, **Oklahoma, USA**.

33. 03/12/2021, Colloquium talk at the University of Georgia, held online, **Georgia, USA**.

34. 30/11/2021, Colloquium talk at the University of Illinois Chicago, held online, **Chicago, USA**.

35. 21/11/2021, Seminar on Complex Algebraic Geometry, Université de Lorraine, **Nancy, France**.

36. 10/11/2021, Seminar on Algebraic Geometry, IST Austria, **Klosterneuburg, Austria**.

37. 09/11/2021, Colloquium talk at the Hausdorff Center of Mathematics, held online, **Bonn, Germany**.

38. 25/06/2021, Tropical Geometry in Zoom (TGiZ) Seminar, hosted at the Goethe University Frankfurt, **online**.

39. 6/05/21, Audition for a maitre de conférence post in Algébre, Arithmétique, Géométrie algébrique at Université Paris Saclay, Orsay **online**.

40. 22/04/2021, Audition for a maitre de conférence post in geometry at Université d'Angers, **Angers, France**.

41. 19/04/2021, Audition for a maitre de conférence post in Algébre et géométrie at Université de Paris, **online**.

42. 13/04/2021, "Seminar on Algebra, Geometry and Physics", Max Planck Institute Bonn joint with Humboldt University Berlin, **online**.

43. 02/04/2021, "Seminar on cluster algebras and quiver representations", organised Bernhard Keller and Pierre-Guy Plamandon, online.

44. 26/03/2021, "Seminar on cluster algebras and quiver representations", organised by Bernhard Keller and Pierre-Guy Plamandon, **online**.

45. 03/02/2021 Tenure-track job interview, "Vrije Universiteit Amsterdam", **online**.

46. 12/01/2021 "Laboratoire de Mathématiques de Versailles Algebra and Geometry Seminar", **online**.

47. 09/12/2020 "Boston University Geometry and Physics Seminar ", Boston/USA, **online**.

48. 03/12/2020 "Northwestern University Geometry and Physics Seminar", Northwestern/USA, **online**.

49. 03/12/2020 "Zoom Algebraic Geometry Seminar", organised by Ivan Cheltsov at Edinburgh, UK, **online**.

50. 31/10/2020 Seminar series on "Moduli Across the Pandemic", organised by Dawei Chen and Qile Chen, **online**.

51. 16/09/2020 "UCGEN Algebraic Geometry Seminars", https://sntp.ca/ucgen/, **online**.

52. 09/05/2020, "Zoomerfest" mathematics seminars organized by Nikon Kurnosov, Moscow, Russia, **online**.

53. 27/04/2020, "Seminar in Real and Complex Geometry", **Tel Aviv, Israel**.

54. 24/04/2020, "Seminar on cluster algebras and quiver representations", organised by Bernhard Keller at **Paris, France**.

55. 20/01/2020, Laboratoire de Mathé matique Jean Leray, Nantes, "Seminar on Tropical Geometry in Europe", **Nantes, France**.

56. 05/12/2019, IST Austria, "Seminar on Algebraic Geometry ", **Klosterneuburg, Austria**.

57. 15/11/2019, Paris Diderot University, "Seminar on Cluster algebras and quiver representations", **Paris, France**.

58. 08/11/2019, Paris Diderot University, "Seminar on Cluster algebras and quiver representations", **Paris, France**.

59. 06/11/2019, University of Versailles – Paris Saclay, "Seminar on Arithmetic and Algebraic Geometry". **Versailles, France**,

60. 18/10/2019, Sorbonne University, "Seminar on Enumerative Algebraic Geometry", **Paris, France**.

61. 31/01/2019, Radboud University, "Job Interview for a position of assisstant professorship", **Nijmegen, Netherlands**,

62. 16/11/2018, Sorbonne Université, "Séminaire de Géométrie Enumérative ", **Jussieu, France**,

63. 10/01/2018, Chinese University of Hong-Kong, "Mirror Symmetry and String Theory", **Hong-Kong**.

64. 07/12/2017, University of Hannover, "Seminar on Algebraic Geometry", **Hannover, Germany**.

65. 09/05/2017, University of Warwick, "Algebraic Geometry Seminar", **Warwick, UK**.

66. 27/02/2017, Imperial College, "Algebraic Geometry Seminar", **London, UK**.

67. 15/12/2016, University of Pennsylvannia, "Homological Mirror Symmetry Seminar", **Philadelphia, USA**.

68. 13/12/2016, University of Princeton, "Algebraic Geometry Seminar", **Princeton, USA**.

69. 09/12/2016, Columbia "Symplectic Geometry, Gauge Theory and Categorification Seminar", **NYC, USA**.

70. 06/12/2016, University of California, Berkeley "Algebraic Geometry Seminar", **Berkeley, USA**.

71. 29/11/2016, University of Texas Austin, "Seminar of the research group of Sean Keel", **Austin, USA**.

72. 14/11/2016, University of Rochester, "Geometry Seminar", **Rochester, USA**

73. 03/11/2016, Simons Center, "Seminar on The Math of Gauge Fields", **Stony-Brook, USA**.

74. 09/2016, IAS School, "Postdoctoral Members Seminar", **Princeton, USA**.

75. 05/2016, University of Luxembourg, "Seminar on Algebra, Geometry and Quantization", **Luxembourg**.

76. 12/2015, North German Algebraic Geometry Seminar, **Berlin, Germany**.

77. 09/2015, Max Planck Institute for Mathematics, "Seminar on Algebra, Geometry and Physic", **Bonn, Germany**.

78. 02/2014, "Annual meetimg of the RTG 1670: Mathematics inspired by string theory and quantum field theory", **Travemünde, Germany**.

79. 09/2013, "Autumn School on Algebraic Geometry" Slides at the bottom of the website: /urlhttps://sites.google.com/site/schoolrationalcurves/schedule, **Poitiers, France**.

Mini Courses

80. 01/2020 Kyoto University, "Lecture Series on the Tropical Vertex ", **Kyoto, Japan**.

81. 01/2018, Guangzhou University, "Mini-course on Tropical Geometry", **Guangzhou, China**.

Videos of Recorded Talks

◇ "Quivers and Curves", Conference on Homological Mirror Symmetry, University of Miami, 2023. Video available at youtube: link

◇ "Fock–Goncharov dual cluster varieties and Gross–siebert mirrors", Annual meeting at the Simon's Foundation, 2022. Video available on the conference website: link

◇ "Mirror symmetry for log Calabi–Yau pairs", 3CinG workshop hosted by the University of Warwick, 2021. Video available at youtube: link

◇ "Tropical enumeration of real log maps and log Welschinger invariants", Tropical Geometry in Zoom seminar, 2021. Video available at youtube: link

◇ "Enumerating log maps via wall-crossing" at the NSF FRG Workshop on Moduli Spaces and Stability, 2021. Video available at youtube: link

◇ "Enumerating log maps via wall-crossing" at the ZAG (Zoom Algebraic Geometry) seminar organised by Ivan Cheltsov, 2020. Video available at youtube: link

◇ "The higher dimensional tropical vertex" at the online workshop of Simon's collaboration on "Homological Mirror Symmetry", 2020. Video available at the: workshop's website.

◇ "Log geometric techniques for open invariants in mirror symmetry" at the Simons Center, 2016. Video available at: Stony-Brook video portal

◇ "Log geometric techniques for open invariants in mirror symmetry", at the IAS school, short talks of postdoctoral members, 2016. Video available at: IAS video portal

TEACHING
EXPERIENCE
- ⋄ Lecturer for "Calculus III: accelerated calculus for engineers", University of Georgia, USA, spring 2023.
- ⋄ Lecturer for "Calculus I", University of Georgia, USA, fall 2022.
- ⋄ Lecturer for "Riemannian Geometry", Imperial College London, UK, 2018-2019.
- ⋄ TA for "Algebra", in German, University of Hamburg, Germany, 2014.
- ⋄ TA for "Algebraic geometry II", University of Hamburg, Germany, 2013.

SUPERVISION
- ⋄ B.Sc. student at the University of Georgia (Kyle Jones), during spring 2023, part of the directed reading program.
- ⋄ M.Sc. student at Imperial College London (Vivek Mistry). His subsequent position: PhD at the University of Edinburgh.

SERVICE
- ⋄ Refereeing for several journals, including Compositio Mathematica, Journal of Differential Geometry, Journal of the London Mathematical Society, Communications in Analysis and Geometry
- ⋄ Reviewer for AMS Mathematical Reviews and for zbMath.

CONFERENCE
ORGANIZATION
- ⋄ Co-organiser of the "Georgia Algebnraic Geometry Symposium", at the University of Georgia, 2023, `https://sites.google.com/view/gags2023`.
- ⋄ Co-organiser of the "Conference on New Perspectives on SYZ Mirror Symmetry", at Imperial College London, 2021, `https://sites.google.com/view/imperial-syz`.

LANGUAGES
- ⋄ English, fluent
- ⋄ French, fluent
- ⋄ German, fluent
- ⋄ Turkish, fluent