Ádám Gyenge

Curriculum vitæ

Alfréd Rényi Institute of Mathematics
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Areas of Specialization

Algebraic Geometry, Representation Theory

Research Interests

Moduli Spaces, Derived Categories, Singularity Theory, Donaldson-Thomas Invariants
Geometric Aspects of Representation Theory, Vertex Algebras, Symplectic Geometry

Positions

2021– **Marie Skłodowska-Curie Fellow**, *Alfréd Rényi Institute of Mathematics*, Budapest, Hungary.

2019–2021 **EPSRC Postdoctoral Research Assistant**, *University of Oxford*, Oxford, UK.
Lecturer, *Jesus College*, Oxford, UK.

2016–2018 **Postdoctoral Researcher**, *University of British Columbia*, Vancouver, BC, Canada.

2014–2016 **Young researcher**, *Alfréd Rényi Institute of Mathematics*, Budapest, Hungary.

Education

2016 **PhD in Mathematics**, *Eötvös Loránd University*, Budapest, Hungary.
Grade: Summa cum laude
Thesis title: Hilbert scheme of points on some classes of surface singularities
Advisors: András Némethi (Alfréd Rényi Institute of Mathematics) & Balázs Szendrői (University of Oxford, UK)

2011 **MSc in Mathematics**, *Budapest University of Technology and Economics*.

2010 **MSc in Computer Science**, *Budapest University of Technology and Economics*.

2010 **BSc in Mathematics**, *Budapest University of Technology and Economics*.

2008 **Exchange studies with the Erasmus scholarship**, *Aalto University, School of Science and Technology*, Helsinki, Finland.

Publications

Preprints

[1] Alastair Craw, Søren Gammelgaard, Ádám Gyenge, and Balázs Szendrői. *Quot schemes for Kleinian orbifolds*. `http://arxiv.org/abs/2106.10115`. Submitted.

[2] Ádám Gyenge, Clemens Koppensteiner, and Timothy Logvinenko. *The Heisenberg category of a category*. `http://arxiv.org/abs/2105.13334`. Submitted.

[3] Ádám Gyenge. *Rigid ideal sheaves and modular forms*. `http://arxiv.org/abs/2103.17050`. Submitted.

[4] Jim Bryan and Ádám Gyenge. *G-fixed Hilbert schemes on K3 surfaces, modular forms, and eta products*. `http://arxiv.org/abs/1907.01535`. Submitted.

[5] Ádám Gyenge. *A power structure over the Grothendieck ring of geometric dg categories*. `http://arxiv.org/abs/1709.01678`. Submitted.

Published articles

[6] Alastair Craw, Søren Gammelgaard, Ádám Gyenge, and Balázs Szendrői. *Punctual Hilbert schemes for Kleinian singularities as quiver varieties*. Algebraic Geometry (2021).

[7] Ádám Gyenge. "Young walls and equivariant Hilbert schemes of points in type D". In: *Singularities and Their Interaction with Geometry and Low Dimensional Topology*. Springer, 2021, pp. 33–52.

[8] Tamás Görbe and Ádám Gyenge. *Canonical spectral coordinates for the Calogero-Moser space associated with the cyclic quiver*. Journal of Nonlinear Mathematical Physics 27.2 (2020), pp. 243–266.

[9] Ádám Gyenge. *The transition function of G_2 over S^6*. Symmetry, Integrability and Geometry: Methods and Applications (SIGMA) 15.078 (2019), pp. 1–16.

[10] Ádám Gyenge, András Némethi, and Balázs Szendrői. *Euler characteristics of Hilbert schemes of points on simple surface singularities*. European Journal of Mathematics 4.2 (2018), pp. 439–524.

[11] Ádám Gyenge. *Enumeration of diagonally colored Young diagrams*. Monatshefte für Mathematik 183.1 (2017), pp. 143–157.

[12] Ádám Gyenge, András Némethi, and Balázs Szendröi. *Euler characteristics of Hilbert schemes of points on surfaces with simple singularities*. International Mathematics Research Notices 2017.13 (2017), pp. 4152–4159.

[13] Ádám Gyenge. *Hilbert scheme of points on cyclic quotient singularities of type $(p, 1)$*. Periodica Mathematicae Hungarica 73.1 (2016), pp. 93–99.

[14] Ádám Gyenge, Janne Sinkkonen, and András A. Benczúr. *An efficient block model for clustering sparse graphs*. In: *Proceedings of the 8th International Workshop on Mining and Learning with Graphs (MLG 2010), Washington, DC*. ACM. 2010, pp. 62–69.

[15] Ádám Gyenge, Juuso Parkkinen, Janne Sinkkonen, and Samuel Kaski. *A block model suitable for sparse graphs*. In: *Proceedings of the 7th International Workshop on Mining and Learning with Graphs (MLG 2009), Leuven*. ACM. 2009.

Theses & other publications

[16] Ádám Gyenge. *Hilbert schemes of points on some classes of surface singularities*. Mathematics PhD thesis. Eötvös Loránd University, 2016.

[17] Ádám Gyenge. *On the topology of the exceptional Lie group G_2*. Mathematics MSc thesis. Budapest University of Technology and Economics, 2011.

[18] Ádám Gyenge. *Bayesian clustering of block structured relational data*. Computer Science MSc thesis. Budapest University of Technology and Economics, 2010.

[19] Ádám Gyenge. *Malliavin calculus and its applications*. Mathematics BSc thesis. Budapest University of Technology and Economics, 2010.

[20] Ádám Gyenge. *Statistical methods for the investigation of scale-free networks (In Hungarian)*. 2007.

Short term visits

2015 University of Oxford, UK (1 week)

2014 University of Oxford, UK (1 month)

Talks

Research talks & posters

2021 *Hilbert schemes of Kleinian singularities as quiver varieties*, Szeged Geometry Day, University of Szeged, Hungary (01/10)

The Heisenberg category of a category, University of Cardiff, UK (14/07)

The Heisenberg category of a category, Rényi Institute, Budapest, Hungary (09/04)

2020 *Punctual Hilbert and Quot schemes on Kleinian singularities*, University of Warwick, UK (28/04)

2019 *Equivariant Hilbert scheme of points on K3 surfaces and modular forms*, University of Bonn, Germany (14/11)

Equivariant Hilbert scheme of points on K3 surfaces and modular forms, MAGIC Seminar, Imperial College, London, UK (25/06)

Equivariant Hilbert scheme of points on K3 surfaces and modular forms, Algebraic Geometry Seminar, University of Oxford, UK (21/05)

Equivariant Hilbert scheme of points on K3 surfaces, British Algebraic Geometry Meeting, Liverpool, UK (poster, 24-26/04)

2018 *A power structure over the Grothendieck ring of geometric dg categories*, Structures in Enumerative Geometry Workshop, MSRI, Berkeley, USA (poster, 19-23/03)

A power structure over the Grothendieck ring of geometric dg categories, Algebraic Geometry Seminar, Columbia University, USA (23/02)

2017 *A power structure over the Grothendieck ring of geometric dg categories*, Algebraic Geometry and Differential Topology Seminar, Alfréd Rényi Institute of Mathematics, Budapest, Hungary (22/12)

A power structure over the Grothendieck ring of geometric dg categories, Western Algebraic Geometry Symposium, UCLA, USA (poster, 14-15/10)

Hilbert scheme of points on simple singularities, Algebraic Geometry Seminar, UC Davis, USA (18/10)

Power structure over the Grothendieck ring of geometric dg categories, Algebraic Geometry Seminar, UBC, Canada (25/09)

Power structure over the Grothendieck ring of geometric dg categories, Algebraic Geometry Seminar, University of Washington, USA (02/05)

2016 *Hilbert scheme of points on simple singularities*, Algebraic Geometry Seminar, UBC, Canada (12/09)

Hilbert scheme of points on simple singularities, GAeL XXIV Conference, Nesin, Turkey (poster, 13-17/06)

Hilbert scheme of points, Seminar Talk, University of Szeged, Hungary (16/04)

Hilbert scheme of points on simple singularities, Algebraic Geometry Seminar, University of Mainz, Germany (07/01)

2015 *Cayley octonions and the Lie group G_2*, Geometry and Mathematical Physics Seminar, University of Szeged, Hungary (15/10)

Hilbert scheme of points on simple singularities, Algebraic Geometry and Differential Topology Seminar, Rényi Institute, Hungary (27/02)

2014 *Hilbert scheme of points of surface singularities*, Algebraic and Symplectic Geometry Seminar, University of Oxford, UK (18/03)

Hilbert scheme of points on cyclic quotient singularities, Geometry Seminar, Budapest University of Technology and Economics, Hungary (29/04)

2010 *An efficient block model for clustering sparse graphs*, ACM KDD Conference, MLG Workshop, Washington DC, USA (25/07)

Local talks & lecture series

2019 *The Ran space*, Homological Theory Seminar, University of Oxford

2017 *Vertex algebras in algebraic geometry*, Algebraic Geometry Learning Seminar, UBC

Coherent sheaves on P^n after Beilinson, Algebraic Geometry Student Seminar, UC Davis

Coherent sheaves on P^n after Beilinson, Algebraic Geometry Student Seminar, University of Washington

Coherent sheaves on P^n after Beilinson, Algebraic Geometry Learning Seminar, UBC

The motivic change of variables theorem, Motivic Integration Learning Seminar, UBC

2016 *The affine Grassmannian*, Vector Bundles Learning Seminar, Rényi Institute

Conformal vertex algebras, Conformal Field Theory Learning Seminar, Rényi Institute

Cohomological descent (2 lectures), p-adic Hodge Theory Learning Seminar, Rényi Institute

2015 *The derived de Rham complex*, p-adic Hodge Theory Learning Seminar, Rényi Institute

Vertex algebras (3 lectures), Conformal Field Theory Learning Seminar, Rényi Institute

2014 *Introduction to étale cohomology*, Summer School on the Applications of Étale Cohomology, Rényi Institute

Étale cohomology of curves, Étale Cohomology Learning Seminar, Eötvös Loránd University

Hilbert scheme of points on plane curve singularities (2 lectures), Singularity Theory Seminar, Rényi Institute

Belyi's theorem, Galois Theory Topics Course, Rényi Institute

2013 *Étale morphisms*, Étale Cohomology Learning Seminar, Eötvös Loránd University

Construction of the Hilbert Scheme (4 lectures), Hilbert Schemes & Quiver Varieties Topics Course, Budapest University of Technology and Economics

2012 *Basics of Hodge theory (3 lectures)*, Symplectic Geometry Seminar, Eötvös Loránd University

2011 *Surgery and duality*, Topology Seminar, Eötvös Loránd University

Professional activities, teaching & seminars

Refereeing for

Advances in Mathematics, Selecta Mathematica, Symmetry, Integrability and Geometry: Methods and Applications (SIGMA), Journal of Pure and Applied Algebra, Kyoto Journal of Mathematics, Quarterly Journal of Mathematics, Research in the Mathematical Sciences

Reviewing for

Mathematical Reviews

Conferences organized

2019 Némethi is 60: Geometry and Topology of Singularities, Rényi Institute, Budapest

2014 Summer School on the Applications of Étale Cohomology, Rényi Institute, Budapest

Seminars organized

2017-2018 UBC Algebraic Geometry Seminar, Vancouver

2016 Vector Bundles Learning Seminar, Budapest

2015 Informal Mathematical Physics and Representation Theory Seminar, Budapest

2014 Conformal Field Theory Learning Seminar, Budapest

2013 Étale Cohomology Learning Seminar, Budapest

Teaching

2019–2020 Tutorials at Jesus College, Oxford: Constructive Mathematics, Metric Spaces and Complex Analysis, Groups and Group Action, Analysis II & III

2016–2018 Lectures at UBC: Introduction to Differential Calculus (2x), Introduction to Integral Calculus (2x), Multivariable Calculus

2007–2015 Practice sessions and tutoring in Budapest for numerous undergraduate courses, including Single and Multivariable Calculus, Differential Equations, Linear Algebra, Stochastic Processes, Probability Theory, Theory of Algorithms, Introduction to Computer Science.

Honors, awards & grants

2021–2023	Marie Skłodowska-Curie Individual Fellowship (Grant ID: ModSingLDT)
2019–2021	EPSRC Postdoctoral Research Assistantship (Grant no.: EP/R045038/1, PI: Balázs Szendrői)
2018	Travel grant of the ICERM, Providence, RI
2012	Travel grant of the Clay Mathematical Institute
2011–2014	PhD Scholarship of the Hungarian Republic
2006–2010	Scholarship of the Hungarian Republic
2009	Third Prize, BUTE Mathematics Competition
2009	Second Prize, Students National Scientific Conference
2008	Honour, BUTE Mathematics Competition
2007	First Prize, BUTE Students Scientific Conference

Others

Nationality

Hungarian

Language skills

Hungarian	Native
English	Fluent
German	Intermediate
Spanish	Elementary

Hobbies

Running, Backyard Astronomy, Dancing Rock&Roll, Bicycle, Reading