Daniel Gulotta

Curriculum Vitae

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Employment

2020–	**Postdoctoral Fellow**, *Max Planck Institute for Mathematics*.
2018–2020	**Postdoctoral Research Assistant**, *University of Oxford*.

Education

2012–2018	**PhD in Mathematics**, *Columbia University*.
	Advisor: Eric Urban
	Thesis: Equidimensional Adic Eigenvarieties for Groups with Discrete Series
2007–2012	**PhD in Physics**, *Princeton University*.
	Advisor: Christopher Herzog
	Thesis: AdS/CFT in String Theory and M-theory
2003–2007	**SB in Mathematics and Physics**, *Massachusetts Institute of Technology*.

Research interests

- Langlands program, nonarchimedean geometry and analysis, p-adic Hodge theory

Publications

- A. Caraiani, D. Gulotta, C. Johansson, *Vanishing theorems for Shimura varieties at unipotent level*, J. Eur. Math. Soc., to appear, arXiv:1910.09214

- A. Graham, D. Gulotta, Y. Xu, *Bounding Selmer groups for the Rankin-Selberg convolution of Coleman families*, Canad. J. Math. 73: 805–853, arXiv:1905.08002

- A. Caraiani, D. Gulotta, C.-Y. Hsu, C. Johansson, L. Mocz, E. Reinecke, S.-C. Shih, *Shimura Varieties at level $\Gamma_1(p^\infty)$ and Galois representations*, Compositio Mathematica 156: 1152–1230 (2020), arXiv:1804.00136

- D. Gulotta, *Equidimensional adic eigenvarieties for groups with discrete series*, Algebra Number Theory 13(8): 1907-1940 (2019), arXiv:1707.05302

- D. Gulotta, C. Herzog, T. Nishioka, *The ABCDEF's of Matrix Models for Supersymmetric Chern-Simons Theories*, JHEP (2012), arXiv:1201.6360

- D. Gulotta, C. Herzog, J. Ang, *Matrix Models for Supersymmetric Chern-Simons Theories with an ADE Classification*, JHEP (2012), arXiv:1111.1744

- D. Gulotta, C. Herzog, S. Pufu, *Operator Counting and Eigenvalue Distributions for 3D Supersymmetric Gauge Theories*, JHEP (2011), arXiv:1106.5484

- D. Gulotta, C. Herzog, S. Pufu, *From Necklace Quivers to the F-theorem, Operator Counting, and $T(U(N))$*, JHEP (2011), arXiv:1105.2817

- D. Gulotta, C. Herzog, M. Kaminski, *Sum Rules from an Extra Dimension*, JHEP (2011), arXiv:1010.4806

- D. Gulotta, *Properly ordered dimers, R-charges, and an efficient inverse algorithm*, JHEP (2008), arXiv:0807.3012

- S. Gubser, D. Gulotta, S. Pufu, F. Rocha, *Gluon energy loss in the gauge-string duality*, JHEP (2008), arXiv:0803.1470
- K. Kedlaya (with an appendix by D. Gulotta), *Mass Formulas for Local Gaois Representations*, International Mathematics Research Notices (2007), arXiv:math/0511135
- A. Spann, D. Kane, D. Gulotta, *Electoral Redistricting with Moment of Inertia and Diminishing Halves Models*, UMAP Journal 28 (2007): 281–299
- D. Gulotta, D. Kane, A. Spann, *Application of Min-Cost Flow to Airline Accessibility Services*, UMAP Journal 27 (2006): 367–385
- A. Spann, D. Kane, D. Gulotta, *Lane Changes and Close Following: Troublesome Tollbooth Traffic*, UMAP Journal 26 (2005): 317–330

Invited Talks

- Essen Algebraic Geometry and Arithmetic Seminar, October 2021
- Bielefeld Arithmetic Geometry Seminar, July 2021
- Heilbronn Number Theory Seminar, Bristol, January 2021
- p-adic cohomology, p-adic families of modular forms, and p-adic L-functions, CRM, Montreal, December 2020 (conference reformatted and talk canceled due to COVID-19 pandemic)
- Warwick Number Theory Seminar, October 2019
- London Number Theory Seminar, June 2019
- Oxford Number Theory Seminar, November 2018
- Columbia Automorphic Forms and Arithmetic Seminar, February 2018
- Special Session on p-adic Aspects of Arithmetic Geometry, AMS Eastern Sectional Meeting, September 2017
- Boston University Number Theory Seminar, January 2017
- Noncommutative Algebraic Geometry and D-Branes, Simons Center for Geometry and Physics, December 2011

Other Talks

- MPIM Number Theory Lunch Seminar, Bonn, February 2021
- p-adic Langlands Correspondence: a Constructive and Algorithmic Approach, Centre Henri Lebesgue, September 2019
- Young Researchers in Algebraic Number Theory, University of Sheffield, November 2018

Teaching Experience

- p-adic Hodge Theory, Summer 2020
- Perfectoid Spaces, Summer 2019
- Rigid Analytic Geometry (tutorial course), Summer 2019
- College Algebra / Analytic Geometry, Spring 2018
- Undergraduate Seminar (Ramanujan Graphs and Number Theory), Fall 2017
- Undergraduate Seminar (Discrete Geometry), Spring 2016
- Undergraduate Seminar (Elliptic Curves), Fall 2015
- Calculus II, Spring 2015

- Calculus II, Fall 2014

Awards

- NSF Graduate Fellowship (2007-2010)
- COMAP Mathematical Contest in Modeling - Outstanding (2005, 2006, 2007) (Team of 3)
- William Lowell Putnam Competition - Top 26 (2004)
- International Physics Olympiad - Best Theory and Gold Medal (2003)
- Math Olympiad Summer Program Rookie of the Year (2002)
- USA Mathematical Olympiad - 13th place (2002)

Work Experience

2009–2012 **Director**, *MIT Battlecode AI Programming Competition*, Cambridge, MA.
Organized, wrote software for, and taught classes for an annual programming competition.

2009 **Mentor**, *Canada/USA Mathcamp*, Tacoma, WA.
Taught advanced mathematics courses to high school students.

2004 **Researcher**, *Digital Word Corporation*, Bellevue, WA.
Researched lensless imaging systems.

Additional activities

- Co-organizer for Student Number Theory Seminar at Columbia, Spring 2017
- Referee for Algebra & Number Theory
- Visiting speaker at Canada/USA Mathcamp 2010, 2020–2021
- Member of Qualifying Quiz committee at Canada/USA Mathcamp, 2010–present; coordinator of committee, 2019–2020
- Intersession session leader at Illinois Mathematics and Science Academy, 2021

Language skills

- English (native), French (intermediate), German (basic)