David Ben-Zvi

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Education

Harvard University, Ph.D., Mathematics, 1999.

Princeton University, B.A. Summa Cum Laude, Mathematics, 1994.

Positions and Appointments

University of Texas, University Chair in Mathematics, 2024–present.

University of Texas, Professor, Department of Mathematics, 2014–present.

Mathematical Sciences Research Institute, Research Professor (Simons Professorship), Spring 2020.

All Souls College, University of Oxford, Visiting Fellow, Trinity Term 2018.

Institute for Advanced Study, Member, Spring 2018.

University of Texas, Joe B. and Louise Cook Professor of Mathematics, 2013–2017.

University of California at Berkeley, Visiting Professor, Spring 2014.

Mathematical Sciences Research Institute, Research Professor (Eisenbud and Simons Professorships), Fall 2014.

University of Texas, Associate Professor, Department of Mathematics, 2008–2014.

Simons Center for Geometry and Physics, Visitor, Spring 2012.

Institute for Advanced Study, Member, Spring 2008.

University of Texas, Assistant Professor, Department of Mathematics, 2003–2008.

Northwestern University, Visiting Assistant Professor, Fall 2004.

University of Chicago, L.E. Dickson Instructor, Department of Mathematics, 1999-2003.

Mathematical Sciences Research Institute, Postdoctoral Fellow, Spring 2002.

The Geometry Center, University of Minnesota, Apprentice and Visitor, 1991–1994.

Honors and Awards

William J. Spencer Lecture, Kansas State University. November 2018.

Plenary Lecture, Clay Research Conference, University of Oxford, September 2016.

Fellow of the American Mathematical Society, elected in inaugural class, 2012.

Plenary Lecture, AMS Central Sectional Meeting, Baylor University, 2009.

London Math Society Invited Lecture Series, University of Oxford, 2007.

Princeton University Math Department Undergraduate Prizes: 1993 Brown Prize, 1994 Covington Prize and 1994 Miller Prize

Barry M. Goldwater Scholarship, 1993–1994.

Awards for "Outside In": (Geometry Center video production, credits as Animator and Script Writer) First Place in 1998 International Congress of Mathematicians VideoMath Contest. Shown at SIGGRAPH 94 Electronic Theater, won awards at NICOGRAPH, London Effects and Animation Festival, Prix Pixel Imagina, and Prix Ars Electronica, and was featured on the cover of Scientific American.

Grants and Fellowships

National Science Foundation (NSF) Individual Grant DMS-2302356, "L-functions via Geometric Quantization," 2023–2026.

NSF Individual Grant DMS-2001398, "Arithmetic Aspects of Electric-Magnetic Duality," 2020–2023.

Faculty Research Assignment, University of Texas, Spring 2020.

NSF Individual Grant DMS-1705110, "Representation Theory as Gauge Theory," 2017–2020.

Simons Fellow in Mathematics, Fall 2018.

NSF Research and Training Group grant, Geometry and Topology Group Grant, 2012–2017.

NSF Five-Year Individual Grant DMS-1103525, "Geometric Harmonic Analysis and Applications," 2011–2016.

NSF Focused Research Group grant DMS-1160461, "In and around Theory X," Co-PI, 2012–2015.

AIM SQuaRE Grant, "Baum-Connes Conjecture and Geometric Representation Theory," 2008–2014

President's Associates Centennial Teaching Fellowship in Mathematics, University of Texas, 2011-13.

NSF CAREER Award DMS-0449830, "Representation Theory on Curves," 2005–2010.

NSF Individual Grant DMS-0401448, "Algebraic Geometry of Difference Operators and Real Bundles," 2004–2007.

Summer Research Assignment, University of Texas, 2004.

NSF Postdoctoral Research Fellowship, "New Geometries from Loop Groups and Conformal Algebras," University of Chicago, 1999–2001.

NSF Graduate Fellowship, Harvard University, 1994–1997.

Books and Monographs

Relative Langlands Duality (with Y. Sakellaridis and A. Venkatesh). Preprint. Available at https://web.ma.utexas.edu/users/benzvi/

Electric-Magnetic Duality and the Langlands Program (with J. Van Dyke). Course notes available at https://web.ma.utexas.edu/users/vandyke/notes/

Vertex Algebras and Algebraic Curves (with E. Frenkel). Mathematical Surveys and Monographs 88, American Mathematical Society 2001. (Reviewed by Y.-Z. Huang in Bull. AMS Vol. 39 No. 4 (2002) 585-591.) Featured Review MR1849359 (2003f:17036).

Papers

Between Coherent and Constructible Local Langlands Correspondences (with H. Chen, D. Helm and D. Nadler). arXiv:2302.00039. To appear, Proceedings of the 2022 IHES Summer School on the Langlands Program.

Coherent Springer theory and the categorical Deligne-Langlands correspondence (with H. Chen, D. Helm and D. Nadler) arXiv:2010.02321. *Invent. Math.* 235 No. 2 (2024), 255–344.

Wonderful asymptotics of matrix coefficient $\mathcal{D}$-modules (with I. Ganev) arXiv:1901.01226. *Adv. Math.* 408 (2022), Paper No. 108578, 42 pp.

Secondary products in supersymmetric field theory (with C. Beem, M. Bullimore, T. Dimofte and A. Neitzke) arXiv:1809.00009. *Ann. Inst. H. Poincaré.* 21(2020) no.4, 1235–1310.

Symmetries of categorical representations and the quantum Ngô action (with S. Gunningham). arXiv:1712.01963.

The character field theory and homology of character varieties (with S. Gunningham and D. Nadler). arXiv:1705.04266. *Math. Res. Lett.* Volume 26, No. 5 (2019) 1313–1342.

Highest weights for categorical representations (with S. Gunningham and H. Orem). arXiv:1608.08273. *Int. Math. Res. Not.* 24 (2020) 9988–10004.

Betti Geometric Langlands (with D. Nadler). arXiv:1606.08523. Algebraic geometry: Salt Lake City 2015, 3-41, Proc. Sympos. Pure Math., 97.2, Amer. Math. Soc., Providence, RI, 2018.

Quantum Character Varieties and Braided Module Categories (with A. Brochier and D. Jordan). arXiv:1606.04769. *Selecta Math.* 24 (2018) no. 5, 4711–4748.

Betti Spectral Gluing (with D. Nadler). arXiv:1602.07379. *Adv. Math.* 380 (2021).

Integrating Quantum Groups over Surfaces (with A. Brochier and D. Jordan). arXiv:1501.04652. *J. of Topology.*, 11 (2018), no. 4, 874–917.

Integral Transforms for Coherent Sheaves (with D. Nadler and A. Preygel). arXiv:1312.7164. *J. European Math Soc.* 19 (2017), no. 12, 3763–3812.

A Spectral Incarnation of Affine Character Sheaves (with D. Nadler and A. Preygel). arXiv:1312.7163. *Compositio Math.* Volume 153 (9) 2017.

Secondary Traces (with D. Nadler). arXiv:1305.7177

Nonlinear Traces (with D. Nadler). arXiv:1305.7175. In: Géométrie Algébrique Derivée. *Panoramas et Synthèses*, Societé Math. de France, 2021.

Morita Equivalence for Convolution Categories: Appendix to [BFN] (with J. Francis and D. Nadler). arXiv:1209.0193

Beilinson-Bernstein Localization over the Harish-Chandra Center (with D. Nadler). arXiv:1209.0188.

Elliptic Springer Theory (with D. Nadler). arXiv:1302.1753. *Compositio Math.* 151 (8), 2015 1568-1584.

The character theory of a complex group (with D. Nadler). e-print arXiv:0904.1247. Pending revisions, J. Euro. Math. Soc.

Loop Spaces and Representations (with D. Nadler). e-print arXiv:1004.5120. *Duke Math J.* (2013) **162** (9), 1587-1619.

Loop Spaces and Connections (with D. Nadler). e-print arXiv:1002.3636. *J. of Topology* (2012) 5(2): 377–430.

$\mathcal{D}$-Bundles and Integrable Hierarchies (with T. Nevins). e-print math.AG/0603070. *Jour. European Math Soc.* **13**, Issue 6, (2011) 1503–1565.

$\mathcal{W}$-Symmetry of the Adelic Grassmannian (with T. Nevins). e-print arXiv:0807.4992. *Comm. Math. Phys.* **293**, Issue 1 (2010), 185–204.

Integral Transforms and Drinfeld Centers in Derived Algebraic Geometry (with J. Francis and D. Nadler). e-print arXiv:0805.0157. *Jour. Amer. Math. Soc.* **23** (2010), 909–966.

Loop Spaces and Langlands Parameters (with D. Nadler). e-print arXiv:0706.0322.

Perverse Bundles and Calogero-Moser Spaces (with T. Nevins). e-print math.AG/0610097. *Compositio Math.* **144** no. 6 (2008), 1403–1428.

Supersymmetry of the Chiral de Rham Complex (with R. Heluani and M. Szczesny). e-print math.QA/0601532. *Compositio Math.* **144** no.2 (2008), 503–521.

Moduli Spaces. In: *Princeton Companion to Mathematics,* T. Gowers, J. Barrow-Green and I. Leader (Eds). Princeton University Press, Princeton, NJ, 2008.

From Solitons to Many–Body Systems (with T. Nevins). e-print math.AG/0310490. *Pure and Applied Math Quarterly,* Vol. 4 No.2 (2008), 319–361. (Bogomolov special issue, part I)

Flows of Calogero-Moser Systems (with T. Nevins). e-print math.AG/0603072. *Inter. Math Res. Notices* **23** (2007).

Geometric Realization of the Segal–Sugawara Construction (with E. Frenkel). e-print math.AG/0301206. In: *Topology, Geometry and Quantum Field Theory.* Proc., 2002 Oxford Symposium in Honour of the 60th Birthday of Graeme Segal. *London Math Soc. Lecture Note Series* **308**, 2004.

Cusps and $\mathcal{D}$-modules (with T. Nevins). e-print math.AG/0212094. *Jour. Amer. Math. Soc.* **17** no.1 (2004) 155–179.

Opers and Theta Functions (with I. Biswas). e-print math.AG/0204301. *Adv. Math.* **181** (2004) no.2, 368–395.

Theta Functions and Szegö Kernels (with I. Biswas). math.AG/0211441. *Int. Math. Res. Notices* **24** (2003) 1305–1340.

Spectral Curves, Opers and Integrable Systems (with E. Frenkel). *Pub. Math. IHÈS* **94** (2001) 87–159. Featured Review MR1896178 (2003j:14047).

A Quantization on Riemann Surfaces with Projective Structure (with I. Biswas.) *Letters in Mathematical Physics,* **54** (2000) 73–82.

Research Recognition

The monograph *Relative Langlands Duality* is the focus of:

- Arbeitsgemeinschaft at MFI Oberwolfach, April 2025
- Bourbaki Seminar, Paris April 2025
- Kevin Hartnett, "Echoes of Electromagnetism Found in Number Theory", Quanta Magazine, October 12 2023. https://www.quantamagazine.org/echoes-of-electromagnetism-found-in-number-theory-20231012/
- June 2024: LAWRGe (Los Angeles Workshop on Representations and Geometry), organized by H. Williams.
- June 2024: Summer School on Relative Langlands Duality, University of Minnesota, organized by T-H Chen, D. Jiang, K-W Lan and D. Nadler.
- Spring 2024 Seminar series at Columbia University, organized by G. Oh and Q. He.
- Fall 2023 Korea-UK online seminar series on Arithmetic Topological Field Theory and Relative Langlands Duality, organized by M. Kim and SW Shin.
- Fall 2023 Seminar series at Harvard University, organized by B. Gammage and S. Devalapurkar.
- October 2023: ISM Discovery School on Langlands Correspondence for Spherical Varieties, McGill, organized by P. Allen, J. Kamnitzer and C. Mautner.
- February 2021: Frontier Workshop on Periods of Automorphic Forms. POSTECH, Korea (virtual), organized by YJ Choie and SW Shin.

Winter 2022 Bonn ArGOS (Arithmetische Geometrie OberSeminar, organized by A. Caraiani, J. Fintzen and P. Scholze) focused on the paper *Coherent Springer theory and the categorical Deligne-Langlands correspondence*.

Summer 2012 WARTHOG (Workshop on Algebra and Representation Theory Held on Oregonian Grounds, organized by N. Proudfoot) on Categorical Representation Theory focused on the paper *The Character Theory of a Complex Group*.

May 2007 Workshop at University of Michigan (organized by R. Cavalieri) focused on the paper *$\mathcal{D}$-Bundles and Integrable Hierarchies*.

Advising and Mentoring

Postdoctoral:

Bing Instructor German Stefanich, 2021–24.

NSF Postdoctoral Fellow Araminta Amabel, 2022–2023.

Bing Instructor Sam Gunningham, 2013–18.

NSF Postdoctoral Fellow David Jordan, 2011–2013.

Graduate: (with initial academic placement)

JiWoong Park, current doctoral student.

Alberto San Miguel Malaney, Ph.D. 2024. U. of Georgia.

Saad Slaoui, Ph.D. 2024.

Jackson van Dyke, Ph.D. 2024. Recipient, Frank Gerth III Dissertation Award. TU Münich.

Rok Gregoric, Ph.D. 2023 (jointly with Andrew Blumberg). Recipient, Frank Gerth III Dissertation Award. Johns Hopkins University.

Kendric Schefers, Ph.D. 2023 (jointly with Sam Raskin). Recipient, Frank Gerth III Dissertation Award. Berkeley and Simons Center for Geometry and Physics.

Isabelle Scott, M.A. 2020.

Vaibhav Murali, Ph.D. 2019.

Rustam Antia, Ph.D. 2019.

Richard Derryberry, Ph. D. 2018 (jointly with Andy Neitzke). Perimeter Institute and U. Toronto.

Lee Cohn, Ph.D. 2016.

Iordan Ganev, Ph.D. 2016. IST Vienna.

Hendrik Orem, Ph.D. 2015.

Pavel Safronov, Ph.D. 2014. Recipient, Frank Gerth III Dissertation Award. University of Oxford.

Carl Mautner, Ph.D. 2010. Recipient, Frank Gerth III Dissertation Award. NSF Postdoc at Harvard.

Parker Lowrey, Ph.D. 2010. University of Western Ontario.

Undergraduate:

Michael Panner, Undergraduate Honors Thesis, 2024.

Surya Raghavendran, Undergraduate Honors Thesis 2016. Williams Scholar.

Dustan Levenstein, Undergraduate Honors Thesis 2013. Dean's Honored Graduate.

Graduate Courses

Literacy Seminar in Geometry. Spring 2009, Fall 2013, Spring 2023.

Algebraic Geometry. Spring 2016, Fall 2021.

From Maxwell to Langlands. Spring 2021.

Topological Field Theory and Geometric Representation Theory. Fall 2016.

Differential Topology Prelim Course. Spring 2013.

Representation Theory via SL2. Spring 2005, Spring 2012.

Algebra Prelim Course. Fall 2010.

Lie Groups. Fall 2009.

Geometric Langlands. Fall 2007.

Complex Geometry. Spring 2007.

Riemannian Geometry. Fall 2005.

Conformal Field Theory and Representation Theory. Spring 2003, University of Chicago.

Undergraduate Courses

Math 341: Linear Algebra. Spring 2006, Fall 2020, Spring 2022, Fall 2022, Fall 2023 (2 sections).

Differential and Integral Calculus. 408C-D: Fall 2003-Spring 2004. 408K: Spring 2011, Fall 2012, Fall 2015. 408L: Fall 2006, Fall 2008, Fall 2011, Spring 2014, Spring 2019 (2 sections).

Math 373L: Algebraic Structures II. Spring 2017.

Honors Calculus. Math 161: Fall 2000. Math 162: Winter 2000, Winter 2001. University of Chicago.

Math 54W – Linear Algebra and Differential Equations (TA), Berkeley 1998.

Service to Mathematics Community

Member, Scientific Advisory Committee, Simons Center for Geometry and Physics. 2021-2027.

Associate Editor, Advances in Mathematics, 2005-2012.

Referee for journals including Inventiones Mathematicae, Journal of the AMS, Duke Mathematical Journal, Acta Math., Compositio Math, Selecta Math, Journal of Algebraic Geometry, Transformation Groups, Journal of Physics A, Moscow Mathematical Journal, Commun. Math. Physics.

Multiple National Science Foundation grant and review panels.

Reviewer for NSF, NSA, NSERC, ERC and science foundations of Israel, Poland, Austria, Switzerland and others.

AMS Central Section Program Committee, Member 2012, Chair 2013.

Workshops Organized

Co-organizer, SLMath (MSRI) Semester Program on Representation Theory under the influence of Physics. Fall 2026.

Lead Organizer, Artihmetic Quantum Field Theory: Program and Conference at Harvard CMSA. Spring 2024.

Co-organizer, Facets of Noncommutative Geometry: Tom Nevins Memorial Workshop. UIUC, June 2022.

Co-organizer, Workshop on Generalized Symmetries, Anomalies and Observables. Aspen Center for Physics, Summer 2019.

Co-organizer, Symplectic Representation Theory. CIRM Luminy, April 2019.

Co-organizer, Between Topology and Quantum Field Theory, University of Texas 2019.

Scientific Committee, Strings-Math 2017 (Hamburg) and Strings-Math 2018 (Tohoku).

Co-organizer, Simons Center Workshop on Geometric Representation Theory. January 2016.

Lead organizer, MSRI Semester Program on Geometric Representation Theory. Fall 2014.

Co-organizer, MSRI Introductory Workshop on Geometric Representation Theory. September 2014.

Co-organizer, TAGS (Texas Algebraic Geometry Symposium) 2007, 2010, 2013.

Co-organizer, Workshop on New Mathematical Methods in Quantum Gauge Theories. Aspen Center for Physics, Summer 2010.

Co-organizer, Special Session on Representation Theory and Topological Field Theory. AMS Regional Meeting at the University of Illinois Urbana-Champaign. March 2009

Departmental Service

Chair, Graduate Outreach Committee, 2020–

Faculty Advisor, MoCAT (Mathematicians of Color Alliance at Texas), 2020–

Chair, FII Committee in Algebra and Combinatorics, 2016–22

Chair, Review Committee, 2015–6

Chair of triads for Andrew Blumberg, Travis Schedler, Ronny Hadani, Mikhail Khovanov. Member of triads for Andrew Blumberg, Dan Freed, Francesco Maggi, Thomas Chen.

Postdoc committee 2013–4

Strategic Planning Committee, 2012–5

Chairs Committee, 2011–6

Annual Review Committee, 2011, 2016, 2021, 2023

Hiring committee, 2008–2012, 2013–4

Organizer, Mathematics Department Colloquia. University of Chicago, 1999-2003.

Selected Lectures

Invited Lecture Series and Minicourses:

Relative Langlands Duality. Analysis on Homogeneous Spaces and Operator Algebras, Institut Henri Poincaré Paris, March 2025.

Relative Langlands Duality. LAWRGe (Los Angeles Workshop on Representations and Geometry), June 2024.

Relative Langlands Duality.Summer School on Relative Langlands Duality, University of Minnesota, June 2024.

The Langlands Program and Arithmetic QFT. Program on Arithmetic QFT, CMSA Harvard, February 2024.

Electric-Magnetic Duality of Periods and L-functions. Making the bridge: Exploring new connections between number theory and physics. Isaac Newton Institute, Cambridge. August 2022.

Hamiltonian Spaces, Periods and L-functions (joint with Y. Sakellaridis and A. Venkatesh). Frontier Workshop on Periods of Automorphic Forms. POSTECH, Korea (virtual). February 2021.

Relative Geometric Langlands. Workshop on (∞, n)-categories, factorization homology, and algebraic K-theory. MSRI, March 2020.

Algebraic Geometry of Topological Field Theories. KIAS Seoul, August 2018.

Derived Algebraic Geometry of Topological Field Theories. États de la Recherche: Derived Algebraic Geometry. Toulouse, June 2017.

Algebraic Geometry of Topological Field Theories. Advances in geometric representation theory. University of Michigan, May 2016.

Geometry of Extended Field Theories. Workshop on Geometric Unification from Six-Dimensional Physics. BIRS, May 2015.

Topological field theory and Geometric Langlands. Workshop on Singular Supports and Geometric Langlands. CIRM Luminy, March 2015.

Representation Theory on the Torus. Workshop on Geometric Representation Theory, RIMS Kyoto, January 2015.

Representation theory from six dimensions. Workshop on Mathematical Aspects of Six-Dimensional Quantum Field Theory, UC Berkeley, December 2014.

$\mathcal{D}$-modules. Introductory Workshop, MSRI Program on Noncommutative Algebraic Geometry. January 2013.

Categorical Representation Theory. Leader, week-long workshop at University of Oregon. August 2012.

Gauge Theory and Representation Theory I-V. Second International School on Geometry and Physics: Geometric Langlands and Gauge Theory, CRM (Barcelona), March 2010.

Topological Field Theory and Representation Theory I-IV. Workshop on Topological Field Theories. Northwestern University, May 2009.

Topological Field Theory and Geometric Langlands I-IV. Workshop on Geometric Langlands and Physics. KITP Santa Barbara, July 2008.

D-bundles and integrable hierarchies. Co-plenary speaker, Workshop on article "D-bundles and Integrable Hierarchies" with T. Nevins. University of Michigan, May 2007.

The Geometric Langlands Program. The London Math Society 2007 Invited Lecture Series. Oxford University. April 2007.

The Geometric Langlands Program. Invited Lecture Series, Winter School, Mathematisches Institut Göttingen. January 2007.

Geometry of Derived Categories. Minicourse, Graduate Student Warmup Workshop for AMS Summer Institute in Algebraic Geometry. W. of Washington Seattle. July 2005.

Vertex, Chiral and Factorization Algebras I-III. Workshop on Vertex Algebras and their Applications. E.Schrödinger Institute, Vienna. June 2005.

The Geometric Langlands Program. Plenary lecture series, 2005 Talbot Workshop. New Hampshire, February 2005.

Vertex Algebras and Algebraic Curves I-X. University of Pennsylvania. September 2002.

Opers I-III. Geometric Langlands Workshop, CRM Montreal. April 2002.

Introduction to Geometric Langlands I-III. Workshop on Stacks and Moduli Spaces, MSRI Berkeley. January 2002.

Vertex Algebras I-IV. Algebraic Geometry and Langlands Program Workshop, TIFR Mumbai. January 2002.

Colloquia:

Arithmetic Electric-Magnetic Duality. Simons Center for Geometry and Physics, April 2024.

Arithmetic Electric-Magnetic Duality. Perimeter Institute, February 2024.

Traces and L-functions. U. of Edinburgh. January 2024.

Traces and L-functions. Boston College. December 2023.

Traces and L-functions. Johns Hopkins University. December 2023.

Higher geometric quantization and L-functions. Chinese University of Hong Kong (virtual), March 2023.

Relative Langlands Duality. University of Minnesota (virtual), April 2021.

Electric-Magnetic Duality for Periods and L-functions. Western Hemisphere Colloquium in Geometry and Physics (virtual), March 2021.

Electric-Magnetic Duality for Periods and L-functions. Harvard Center for Math. Sciences and Applications (virtual), February 2021.

What is...Geometric Langlands? MSRI, Spring 2020.

Algebraic Geometry of Topological Field Theory. Spencer Lecture, Kansas State University. November 2018.

Symmetries of Hamiltonian actions of reductive groups. IAS, January 2018.

Kostant-Ngô integration of Hamiltonian systems. Rice, October 2017.

Gauge Theory as Representation Theory. Plenary lecture, Clay Research Conference, Oxford, September 2016.

Geometric Harmonic Analysis. UC Berkeley, March 2015.

Geometric Harmonic Analysis. Northwestern, May 2014.

Geometric Harmonic Analysis. Faculty colloquium, University of Texas, April 2014.

Traces, Fixed Points, Characters, Loops. Penn. State, March 2013.

The Fundamental Lemma. University of Texas , January 2010.

Loop spaces and connections. Plenary lecture, AMS Central Sectional Meeting. Baylor University, October 2009.

Langlands Duality and Topological Field Theory. Yale University. January 2008.

Langlands Duality and Topological Field Theory. Brandeis-Harvard-MIT-Northeastern Joint Colloquium. November 2007.

From Loop Groups to Lie Groups. University of Pennsylvania. September 2007.

Loop Spaces and Langlands Parameters. Columbia U. February 2007.

Hecke Algebras and Real Groups. University of Texas Arlington. March 2006.

Real Groups and Langlands Duality. Northwestern U. November 2004.

Solitons and Noncommutative Geometry. University of California, Berkeley. October 2003.

Solitons and Noncommutative Geometry. Rice U. October 2003.

One–Dimensional Algebra. Cohen Prize Lecture, University of Chicago. May 2003.

One–Dimensional Algebra. Keynote Lecture, 29th Annual Graduate Mathematics Conference, Syracuse University. April 2003.

Solitons and Many-Body Systems. University of Minnesota. January 2003.

Solitons and Many-Body Systems. U.C. Davis. January 2003.

Solitons and Many-Body Systems. University of Massachusetts, Amherst. December 2002.

Differential Solitons and Algebraic Geometry. University of Michigan. October 2002.

Geometric Langlands for Beginners. Special Departmental Colloquium, University of Chicago. May 2001.

Moduli spaces and vertex algebras. SUNY Stony-Brook. April 2000.

Geometry of Integrable Systems. UC Riverside. March, 1999.

Invited Conference Talks:

Electric-Magnetic Duality for L-functions. Physics from the Point of View of Geometry: Graeme Segal 80th Birthday Conference. Clay Mathematical Institute, Oxford. September 2022.

Circle Actions in the Categorical Local Langlands Correspondence. Summer School on the Langlands Program. IHES, Paris. July 2022.

Electric-Magnetic Duality for Boundary Conditions and L-functions. QFT for Mathematicians, Perimeter Institute. July 2022.

Geometric Arthur Parameters, or Fun with Shearing. Johns Hopkins Algebra and Number Theory Day, September 2021.

Boundary conditions and hamiltonian actions in geometric Langlands. Sydney Mathematical Research Institute Algebra and Geometry Online, Sydney. June 2020.

Relative Langlands Duality. Online Seminar on Arithmetic Geometry and Quantum Field Theory, Warwick. April 2020.

Higher symmetry in integrable systems and moduli of vacua. Aspen Center for Physics, August 2019.

Langlands Duality for Spherical Varieties. 4th Nisyros / Simons Foundation Conference on Automorphic Representations and Related Topics. Nisyros, Greece. July 2019.

Coherent Affine Springer Theory. Southeast Lie Theory Conference, LSU, May 2019.

Commuting symmetries in gauge theory. Plenary talk, String-Math 2017. Hamburg, July 2017.

Moduli of vacua and categorical representations. Gauge Theory and Categorification, IPAM, March 2017.

Central symmetries in categorical representation theory. Geometric Representation Theory and Beyond, Clay Research Workshop, Oxford, September 2016.

Kostant-Ngô Integration and Moduli of Vacua. Boundaries and Defects in Quantum Field Theories. Aspen Center for Physics, July 2016.

Betti Langlands. Derived structures in geometry and representation theory. Oxford, September 2015.

Hecke algebras and geometric Langlands in genus one. Geometric Representation Theory. Cargese, July 2014.

Algebraic geometry of topological field theories. Reimagining the foundations of algebraic topology. MSRI. April 2014.

Singular supports of coherent sheaves in representation theory. Southwest Local Algebra Meeting (SLAM), Texas A&M, March 2014.

Loops, Characters and Elliptic Curves. Aspects of Topology (Graeme Segal 70th birthday conference). Oxford. December 2012.

Characters and character sheaves. Symplectic Geometry and Representation Theory, Luminy. July 2012.

Geometry of Harish-Chandra characters. Texas Algebraic Geometry Symposium, Texas A&M. April 2012.

Geometry of Harish-Chandra characters. Stanford Topology Seminar. March 2012.

Geometric Character Theory. Strings-Math 2011, University of Pennslyvania.

Character Theory for Complex Groups. Workshop on Macdonald Polynomials and Geometry, Clay Math Institute. March 2010.

Langlands duality for 3d gauge theories. Gauge Theory and Representation Theory. Institute for Advanced Study, November 2007.

Langlands duality for character sheaves. Fourier-Mukai and Nahm transforms. CRM Montreal, August 2007.

Langlands duality and topological field theory. Quantum Geometry. Aspen Center for Physics, July 2007.

Loop Spaces and Langlands Parameters. Noncommutative Geometry. Northwestern U., May 2007.

Geometric Langlands. Workshop on Moduli of Vector Bundles. Clay Foundation, October 2006.

Langlands Duality and Real Groups. Michigan/Ohio State Algebraic Geometry Workshop. Ohio State U., April 2006.

Langlands Duality and Real Groups. Texas Geometry and Topology Conference, University of Texas . October 2005.

What's the deal with Geometric Langlands? AMS Algebraic Geometry Boot Camp, University of Washington. July 2005.

Hilbert Schemes, Perverse Bundles and D Bundles. Session on Noncommutative Geometry, AMS Sectional Meeting, U.C. Santa Barbara. March 2005.

The Langlands Program. Loop Spaces and Elliptic Cohomology, in honor of Jack Morava. University of Toronto, October 2004.

Calogero-Moser Spaces, Perverse Bundles and D-Bundles. Infinite-Dimensional Aspects of Representation Theory and Applications, University of Virginia. May 2004.

Calogero-Moser, KP and D-Bundles. AMS Southeast Regional Meeting, Florida State University. March 2004.

Geometric Langlands and Hitchin Systems. Special Meeting on Geometric Langlands and String Theory. Institute for Advanced Study. March 2004.

Noncommutative Geometry and Soliton Equations. Noncommutative Algebraic Geometry, Mittag-Leffler Institute. January 2004.

Noncommutative Geometry and Soliton Equations. Geometric Methods in Algebra and Number Theory. University of Miami,December 2003.

$\mathcal{D}$–bundles and Grassmannians. Representations of infinite-dimensional Lie algebras and applications, University of California, Santa Barbara. October 2003.

Geometry and the Sugawara Construction. Representations of Loop Groups Conference, UCLA. November 2001.

Affine Springer Fibers and Cartans of Loop Groups. AMS Regional Meeting at Providence College. October, 1999.

Formal Higgs Bundles and Integrable Systems. Vector Bundles on Algebraic Curves '99. Salamanca, June 1999.

Cartan Subgroups of Loop Groups. Lie Groups, Lie Algebras and their Representations, UCLA. December, 1998.

KdV and Algebraic Geometry. Generalized Kac-Moody Algebras, Oberwolfach. July, 1998.

Grassmannians, Connections and Integrable Systems. AMS Regional Meeting at UC Davis. April, 1998.

Everting the Sphere. Smith College Regional Geometry Institute. August 1993.

Regular Homotopy and Sphere Eversions. MSRI Conference on Visualization of Geometric Structures. October 1992.

Recent Departmental Seminars:

2024: BC/MIT Number Theory Seminar, MIT Lie Groups Seminar, Simons Center for Geometry and Physics Special Seminar

2023: U of Chicago Number Theory Seminar, TQFT Club Lisbon, U. of Edinburgh Hodge Seminar

2022: Vienna IST: Algebraic Geometry and Number Theory Seminar

2021: MIT Lie Groups Seminar, UMass Amherst Geometric Representation theory seminar

2020: IAS: Moonshine Seminar

2019: Texas A& M: Algebraic Geometry

2018: IAS: Harmonic Analysis, Princeton: Number Theory, Rutgers: Geometry and Physics, U. Pennsylvania: Mathematical Physics, Oxford: Topology, Imperial: Geometry, Imperial: Number Theory