

Andrew Neitzke

Curriculum Vitae

November 2025

Address: Department of Mathematics
Yale University
PO Box 208283
New Haven, CT 06520-8283, USA
Mailcode: 376
Email: andrew.neitzke@yale.edu

Education

2005 **Harvard University**: Ph.D. in Physics. Advisor: Cumrun Vafa.
1999 **Cambridge University**: Certificate of Advanced Study in Mathematics.
1998 **Princeton University**: AB Degree in Mathematics.

Employment

Fall 2020–present **Yale University**, Department of Mathematics: Professor.
Spring 2020 **Yale University**, Department of Mathematics: Associate professor.
Fall 2019 **Yale University**, Department of Mathematics: Visiting professor.
Fall 2019 **University of Texas at Austin**, Department of Mathematics: Professor.
2015–2019 **University of Texas at Austin**, Department of Mathematics: Associate professor.
2009–2015 **University of Texas at Austin**, Department of Mathematics: Assistant professor.
2008–2009 **Harvard University**, Department of Physics: Postdoctoral researcher.
2005–2008 **Institute for Advanced Study, Princeton**, School of Natural Sciences: Member.

Awards and grants

2024 **National Science Foundation grant** 2405256 (DMS). \$299,877. 2024-08-01 to 2027-07-31.
2022 **Simons Fellowship in Mathematics**. \$162,000. 2022-07-01 to 2023-06-31.
2020 **National Science Foundation grant** 2005312 (DMS). \$412,010. 2020-07-01 to 2023-06-30.
2018 **Fellow of the American Mathematical Society** (2019 class).
2017 **National Science Foundation grant** 1711692 (DMS). \$334,171. 2017-07-01 to 2020-06-30.
2016 **Simons Fellowship in Mathematics**. \$112,051.20. 2016-09-01 to 2017-05-31.
2012 Co-PI on **National Science Foundation FRG grant** 1160461 (DMS). My share \$155,620. 2012-06-01 to 2015-05-31.
2012 **National Science Foundation CAREER grant** 1151693 (DMS). \$417,498. 2012-07-01 to 2017-06-30.
2012 **John R. Durbin Teaching Excellence Award in Mathematics, UT Austin**.
2010 **National Science Foundation grant** 1006046 (DMS). \$152,192. 2010-06-01 to 2014-05-31.
2000 **NDSEG Graduate Fellowship**.
1998 **British Marshall Scholarship**.

External talks since 2014

Multi-lecture series are listed in bold.

2025 Harvard CMSA (seminar talk).
2025 Chicago (FRG Fall School on Quantization and Lagrangians).
2025 Odense (ReNewQuantum International Conference).
2025 Oxford (two math-physics seminar talks).
2025 Paris (Rencontres théoriciennes seminar talk).
2025 Brin Center for Mathematics Research (Geometry and Representation Theory Associated to G -Torsors on Curves).
2024 **Harvard (CMSA Math-Science Lectures in honor of Raoul Bott)**: Two lectures.
2024 **Les Houches School of Physics (Quantum Geometry program)**: Four lectures.
2024 **Simons Center for Geometry and Physics (Simons Workshop in Mathematics)**: Two lectures.
2024 **Simons Center for Geometry and Physics (Quadratic Differentials program)**: Three lectures.
2024 UC Berkeley (math-physics seminar).
2024 University of Sheffield (math seminar).
2024 University of Geneva (math-physics seminar).

- 2023 Northeastern (math seminar).
- 2023 Edinburgh (math seminar).
- 2023 Simons Center (Simons Workshop on Physics).
- 2023 Simons Center (Stokes Phenomenon and its Applications in Mathematics and Physics).
- 2023 BIRS Okanagan (Geometry, Algebra, and Physics of Higgs Bundles).
- 2023 Mainz Institute for Theoretical Physics (Spectral Theory, Algebraic Geometry, and Strings).
- 2023 Boston University (math seminar).
- 2022 Cambridge (Applicable resurgent asymptotics: summary workshop).
- 2022 Brandeis (Brandeis–Harvard–MIT–Northeastern Joint Mathematics Colloquium).
- 2022 Stanford (Geometric Applications of Microlocal Analysis).
- 2022 Cargese (Groups, Geometry and Dynamics).
- 2022 University of Illinois at Chicago (Geometry (Re)United 2022).
- 2022 ReNewQuantum (seminar, virtual).
- 2022 Rutgers (physics seminar, virtual).
- 2021 **Fields Institute (PIMS Summer School on Algebraic Geometry in HEP)**: Four lectures, virtual.
- 2021 **Sheffield (BPS States, Mirror Symmetry and Exact WKB)**: Two lectures, virtual.
- 2021 **International Laboratory of Cluster Geometry, Moscow**: Three lectures, virtual.
- 2021 IBS Center for Geometry and Physics, Korea (virtual).
- 2021 Boston University (math seminar, virtual).
- 2021 Lisbon (math seminar, virtual).
- 2020 UT Austin (math seminar, virtual).
- 2020 Institute for Advanced Study, Princeton (physics seminar, virtual).
- 2020 String-Math 2020 (virtual).
- 2020 Simons Collaboration on Special Holonomy in Geometry, Analysis and Physics (Moduli of Special Holonomy Metrics and their Periods, virtual).
- 2020 UC Berkeley (math seminar, virtual).
- 2020 Kansas State University (math seminar, virtual).
- 2019 UC Davis (math seminar).
- 2019 Hamburg (BPS states, topological recursion, exact WKB and abelianisation).
- 2019 **MSRI, Berkeley**: Four lectures.
- 2019 **Park City Mathematics Institute**: Five lectures.
- 2019 Boston University (math seminar).
- 2018 Perimeter Institute (Higher Algebra in Mathematical Physics).
- 2018 Sendai (String-Math 2018).
- 2018 BIRS, Oaxaca (Higgs Bundles and Harmonic Maps of Riemann Surfaces).
- 2018 CIRM, Marseilles (Vector Bundles over Algebraic Curves).
- 2018 Michigan State University (Cluster Algebras and Mathematical Physics).
- 2018 **Göttingen (Gauge theory and Geometry)**: Four lectures.
- 2018 University of Maryland (math seminar).
- 2017 Yale University (math department colloquium).
- 2017 Rice University (math department colloquium).
- 2017 Stanford University (GEAR Network Retreat).
- 2017 Montana State (Topological and Geometric Methods in QFT, supplementary talk).
- 2017 Montreal (Mathematical Congress of the Americas, special session on Higgs Bundles in Geometry and Physics).
- 2017 UIUC (Enumerative Geometry, Mirror Symmetry and Physics).
- 2017 QGM, Aarhus (math seminar).
- 2017 Caltech (physics seminar).
- 2017 IPAM (Gauge Theory and Categorification).
- 2017 ICMS, Edinburgh (Workshop on Quantum Fields, Knots and Integrable Systems).
- 2017 Perimeter Institute (Mathematics and Physics of Hitchin Systems).
- 2016 University of Hamburg (DESY/ZMP colloquium).
- 2016 Stanford University (SITP colloquium).

- 2016 Stanford University (geometry seminar).
- 2016 Aspen Center for Physics (colloquium).
- 2016 **EPFL, Lausanne (Wall-Crossing and Quiver Varieties)**: Three lectures.
- 2016 MSRI, Berkeley (Hot Topics: Cluster Algebras and Wall-Crossing).
- 2016 Heidelberg (Workshop on Mathematics and Physics of Higgs Bundles).
- 2016 Centre de Recherches Mathématiques, Montreal (Moduli Spaces, Integrable Systems and Topological Recursions).
- 2016 Texas A&M University (physics talk).
- 2016 AIMS, Cape Town (Workshop on Quadratic Differentials).
- 2015 Hausdorff Center for Mathematics, Bonn (Panorama of Mathematics conference).
- 2015 Loyola (AMS Sectional Meeting).
- 2015 AIM, San Jose (New Perspectives on Spectral Data for Higgs Bundles).
- 2015 Centre de Recherches Mathématiques, Montreal (Positive Grassmannians: applications to integrable systems and super Yang-Mills scattering amplitudes).
- 2015 UC Berkeley (math seminar).
- 2015 UC Davis (joint math-physics talk).
- 2015 Northwestern University (departmental colloquium).
- 2014 TSIMF, Sanya, China (Current Developments of Mirror Symmetry).
- 2014 **UC Berkeley (Workshop on Mathematics of Superconformal Field Theory)**: Four lectures.
- 2014 Kansas State University (William J. Spencer Lecture, math department).
- 2014 University of Illinois at Urbana-Champaign (math seminar).
- 2014 Princeton (STRINGS 2014, plenary lecture).
- 2014 **CRM De Giorgi, Pisa (Intensive period on Teichmüller theory and surfaces in 3-manifolds)**: Four lectures.
- 2014 **Pacific Institute for the Mathematical Sciences (String-Math 2014 pre-workshop)**: Four lectures.
- 2014 UC Davis (Mathematics of Quantum Theory, conference in honor of Albert Schwarz).
- 2014 Northwestern University (Representation Theory, Integrable Systems and Quantum Fields).
- 2014 **University of Heidelberg (Heidelberg Lectures in Mathematics and Physics)**: Three lectures.
- 2014 **Miami (Workshop on Mirror Symmetry and Related Topics)**: Three lectures.

Papers published or to appear

1. D. Gaiotto, G. W. Moore, A. Neitzke, and F. Yan. Commuting Line Defects At $q^N = 1$. *Commun. Math. Phys.* **406**(6) (2025), 144. arXiv: [2307.14429 \[hep-th\]](#).
2. Q. Hao and A. Neitzke. A new construction of $c = 1$ Virasoro blocks. *Annales Henri Poincaré* (2025). arXiv: [2407.04483 \[hep-th\]](#).
3. A. Alekseev, A. Neitzke, X. Xu, and Y. Zhou. WKB Asymptotics of Stokes Matrices, Spectral Curves and Rhombus Inequalities. *Commun. Math. Phys.* **405**(11) (2024), 269. arXiv: [2403.17906 \[math-ph\]](#).
4. A. Grassi, Q. Hao, and A. Neitzke. Exponential Networks, WKB and Topological String. *SIGMA* **19** (2023), 064. arXiv: [2201.11594 \[hep-th\]](#).
5. D. S. Freed and A. Neitzke. 3d spectral networks and classical Chern-Simons theory (Aug. 2022). To appear in *Surveys in Differential Geometry*. arXiv: [2208.07420 \[math.DG\]](#).
6. A. Grassi, Q. Hao, and A. Neitzke. Exact WKB methods in $SU(2)$ $N_f = 1$. *JHEP* **01** (2022), 046. arXiv: [2105.03777 \[hep-th\]](#).
7. B. Ergun, Q. Hao, A. Neitzke, and F. Yan. Factorized class S theories and surface defects. *JHEP* **12** (2021), 041. arXiv: [2010.06722 \[hep-th\]](#).
8. A. Neitzke and A. Shehper. Deformations of surface defect moduli spaces. *JHEP* **10** (2021), 035. arXiv: [2011.01970 \[hep-th\]](#).
9. A. Neitzke and F. Yan. The quantum UV-IR map for line defects in $\mathfrak{gl}(3)$ -type class S theories (Dec. 2021). To appear in *JHEP*. arXiv: [2112.03775 \[hep-th\]](#).

10. C. Beem, D. Ben-Zvi, M. Bullimore, T. Dimofte, and A. Neitzke. Secondary products in supersymmetric field theory. *Ann. Henri Poincaré* **21**(4) (2020), 1235–1310.
11. D. Dumas and A. Neitzke. Opers and nonabelian Hodge: numerical studies (2020). To appear in *Experimental Mathematics*. arXiv: [2007.00503 \[math.DG\]](#).
12. D. S. Freed and A. Neitzke. The dilogarithm and abelian Chern-Simons (2020). To appear in *Journal of Differential Geometry*. arXiv: [2006.12565 \[math.GT\]](#).
13. L. Hollands and A. Neitzke. Exact WKB and abelianization for the T_3 equation. *Commun. Math. Phys.* **380**(1) (2020), 131–186. arXiv: [1906.04271 \[hep-th\]](#).
14. A. Neitzke and F. Yan. q -nonabelianization for line defects. *JHEP* **09** (2020), 153. arXiv: [2002.08382 \[hep-th\]](#).
15. J. Distler, M. Martone, and A. Neitzke. On the BPS Spectrum of the Rank-1 Minahan-Nemeschansky Theories. *JHEP* **2020**(100) (Jan. 28, 2019). arXiv: [1901.09929v1 \[hep-th\]](#).
16. D. Dumas and A. Neitzke. Asymptotics of Hitchin’s metric on the Hitchin section. *Comm. Math. Phys.* (367) (2019), 127. arXiv: [1802.07200v2 \[math.DG\]](#).
17. L. Fredrickson and A. Neitzke. Moduli of wild Higgs bundles on CP^1 with $C^\times$ -actions (2017). To appear in *Math. Proc. Camb. Phil. Soc.* arXiv: [1709.06142v1 \[math.DG\]](#).
18. L. Hollands and A. Neitzke. BPS states in the Minahan-Nemeschansky E_6 theory. *Comm. Math. Phys.* **353**(1) (2017), 317–351. arXiv: [1607.01743 \[hep-th\]](#).
19. A. Neitzke. Integral iterations for harmonic maps (2017). To appear in *Beijing Journal of Pure and Applied Mathematics*. arXiv: [1704.01522 \[math.DG\]](#).
20. S. Cecotti, A. Neitzke, and C. Vafa. Twistorial Topological Strings and a tt^* Geometry for $\mathcal{N} = 2$ Theories in 4d. *Adv. Theor. Math. Phys.* **20**(2) (2016), 193–312. arXiv: [1412.4793 \[hep-th\]](#).
21. O. Dumitrescu, L. Fredrickson, G. Kydonakis, R. Mazzeo, M. Mulase, and A. Neitzke. Opers versus non-abelian Hodge (July 2016). To appear in *J. Diff. Geom.* arXiv: [1607.02172 \[math.dg\]](#).
22. L. Hollands and A. Neitzke. Spectral networks and Fenchel-Nielsen coordinates. *Letters in Mathematical Physics* **106**(6) (2016). arXiv: [1312.2979 \[math.GT\]](#).
23. S. Alexandrov, G. W. Moore, A. Neitzke, and B. Pioline. An $\mathbb{R}^3$ index for four-dimensional $\mathcal{N} = 2$ field theories. *Phys. Rev. Lett.* **114**(121601) (2015). arXiv: [1406.2360 \[hep-th\]](#).
24. C. Cordova and A. Neitzke. Line Defects, Tropicalization, and Multi-Centered Quiver Quantum Mechanics. *JHEP* **9** (2014). arXiv: [1308.6829 \[hep-th\]](#).
25. A. Dey and A. Neitzke. Hyperkahler Sigma Model and Field Theory on Gibbons-Hawking Spaces. *JHEP* **04** (2014), 158. arXiv: [1401.0349 \[hep-th\]](#).
26. D. Gaiotto, G. W. Moore, and A. Neitzke. Spectral networks and snakes. *Annales Henri Poincaré* **15**(1) (Jan. 2014), 61–141. arXiv: [1209.0866 \[hep-th\]](#).
27. A. Neitzke. Cluster-like coordinates in supersymmetric field theory. *Proc. Nat. Acad. Sci.* **111**(27) (July 2014), 9717–9724.
28. A. Neitzke. Hitchin systems in $\mathcal{N} = 2$ field theory (2014). In “Exact results in supersymmetric field theory,” edited by J. Teschner. arXiv: [1412.7120 \[hep-th\]](#).
29. D. Gaiotto, G. W. Moore, and A. Neitzke. Framed BPS States. *Adv. Theor. Math. Phys.* **17**(2) (2013), 241–397. arXiv: [1006.0146 \[hep-th\]](#).
30. D. Gaiotto, G. W. Moore, and A. Neitzke. Spectral networks. *Annales Henri Poincaré* **14**(7) (Nov. 2013), 1643–1731. arXiv: [1204.4824 \[hep-th\]](#).
31. D. Gaiotto, G. W. Moore, and A. Neitzke. Wall-crossing, Hitchin systems, and the WKB approximation. *Adv. Math.* **234** (2013), 239–403. arXiv: [0907.3987 \[hep-th\]](#).
32. D. Galakhov, P. Longhi, T. Mainiero, G. W. Moore, and A. Neitzke. Wild Wall Crossing and BPS Giants. *JHEP* **11** (2013), 046. arXiv: [1305.5454 \[hep-th\]](#).
33. A. Neitzke. Notes on a new construction of hyperkahler metrics (2013). In proceedings of *Mirror Symmetry & Tropical Geometry*, Cetraro 2011. arXiv: [1308.2198 \[math.dg\]](#).
34. D. Gaiotto, G. W. Moore, and A. Neitzke. Wall-crossing in coupled 2d-4d systems. *JHEP* **12** (2012). arXiv: [1103.2598 \[hep-th\]](#).
35. D. Gaiotto, G. W. Moore, and A. Neitzke. Four-dimensional wall-crossing via three-dimensional field theory. *Commun. Math. Phys.* **299** (2010), 163–224. arXiv: [0807.4723 \[hep-th\]](#).
36. D. Gaiotto, A. Neitzke, and Y. Tachikawa. Argyres-Seiberg duality and the Higgs branch. *Commun. Math. Phys.* **294** (2010), 389–410. arXiv: [0810.4541 \[hep-th\]](#).

37. M. Günaydin, A. Neitzke, O. Pavlyk, and B. Pioline. Quasi-conformal actions, quaternionic discrete series and twistors: $SU(2, 1)$ and $G_{2(2)}$. *Commun. Math. Phys.* **283** (2008), 169–226. arXiv: [0707.1669 \[hep-th\]](#).
38. U. Keshet and A. Neitzke. Asymptotic spectroscopy of rotating black holes. *Phys. Rev. D* **78** (2008), 044006. arXiv: [0709.1532 \[hep-th\]](#).
39. A. Neitzke and J. Walcher. “Background independence and the open topological string wavefunction”. In: *From Hodge theory to integrability and TQFT*. Providence, R.I.: American Mathematical Society, 2008. arXiv: [0709.2390 \[hep-th\]](#).
40. S. Gukov, L. Motl, and A. Neitzke. Equivalence of twistor prescriptions for super Yang-Mills. *Adv. Theor. Math. Phys.* **11** (2007), 199–231. arXiv: [hep-th/0404085](#).
41. M. Günaydin, A. Neitzke, B. Pioline, and A. Waldron. Quantum attractor flows. *JHEP* **09** (2007), 056. arXiv: [0707.0267 \[hep-th\]](#).
42. A. Neitzke, B. Pioline, and S. Vandoren. Twistors and black holes. *JHEP* **04** (2007), 038. arXiv: [hep-th/0701214](#).
43. M. Günaydin, A. Neitzke, and B. Pioline. Topological wave functions and heat equations. *JHEP* **12** (2006), 070. arXiv: [hep-th/0607200](#).
44. M. Günaydin, A. Neitzke, B. Pioline, and A. Waldron. BPS black holes, quantum attractor flows and automorphic forms. *Phys. Rev. D* **73** (2006), 084019. arXiv: [hep-th/0512296](#).
45. M. Aganagic, A. Neitzke, and C. Vafa. BPS microstates and the open topological string wave function. *Adv. Theor. Math. Phys.* **10** (2005), 603–656. arXiv: [hep-th/0504054](#).
46. R. Dijkgraaf, S. Gukov, A. Neitzke, and C. Vafa. Topological M-theory as unification of form theories of gravity. *Adv. Theor. Math. Phys.* **9** (2005), 603–665. arXiv: [hep-th/0411073](#).
47. A. Neitzke and C. Vafa. “Topological strings and their physical applications”. In: *Surveys in Differential Geometry, Vol. X: Essays in Geometry in Memory of S.S. Chern*. International Press, 2004. arXiv: [hep-th/0410178](#).
48. M. R. Gaberdiel and A. Neitzke. Rationality, quasirationality and finite W-algebras. *Commun. Math. Phys.* **238** (2003), 305–331. arXiv: [hep-th/0009235](#).
49. L. Motl and A. Neitzke. Asymptotic black hole quasinormal frequencies. *Adv. Theor. Math. Phys.* **7** (2003), 307–330. arXiv: [hep-th/0301173](#).
50. L. Motl, A. Neitzke, and M. M. Sheikh-Jabbari. Heterotic plane wave matrix models and giant gluons. *JHEP* **06** (2003), 058. arXiv: [hep-th/0306051](#).
51. A. Iqbal, A. Neitzke, and C. Vafa. A mysterious duality. *Adv. Theor. Math. Phys.* **5** (2002), 769–808. arXiv: [hep-th/0111068](#).

Preprints

1. A. Neitzke. On a hyperholomorphic line bundle over the Coulomb branch (2011). arXiv: [1110.1619 \[hep-th\]](#).
2. S. Cecotti, A. Neitzke, and C. Vafa. R-Twisting and 4d/2d Correspondences (2010). arXiv: [1006.3435 \[hep-th\]](#).
3. A. Neitzke and C. Vafa. $\mathcal{N} = 2$ strings and the twistorial Calabi-Yau (2004). arXiv: [hep-th/0402128](#).
4. A. Neitzke. Greybody factors at large imaginary frequencies (2003). arXiv: [hep-th/0304080](#).
5. R. Dijkgraaf, A. Neitzke, and C. Vafa. Large N strong coupling dynamics in non-supersymmetric orbifold field theories (2002). arXiv: [hep-th/0211194](#).
6. A. Neitzke. Zhu’s theorem and an algebraic characterization of chiral blocks (2000). arXiv: [hep-th/0005144](#).

Service

Referee for **Journal of Differential Geometry**, **Communications in Mathematical Physics**, **Communications in Number Theory and Physics**, **Communications in Analysis and Geometry**, **Journal of Geometry and Physics**, **Advances in Theoretical and Mathematical Physics**, **Nuclear Physics B**, **Journal of High Energy Physics**, **Physical Review D**, **Physical Review Letters**, **Journal of Mathematical Physics**, **Letters in Mathematical Physics**, **Kyoto Journal of Mathematics**, **Cambridge University Press**, **Duke Mathematical Journal**, **SIGMA**, **Geometry & Topology**, various conference proceedings and special volumes.

Served as panelist and mail reviewer for **National Science Foundation**, **Department of Energy**, several other grant-making bodies.

Contributed reviews to **Mathematical Reviews**.

Co-organizer of Aspen Center for Physics workshop “Mathematics of Superconformal Field Theory,” summer 2013.

Co-organizer of the weekly Geometry and String Theory Seminar at UT Austin, 2010-2019.

Co-organizer of Banff International Research Station workshop “Geometric Unification from Six-Dimensional Physics,” May 24-29, 2015.

Co-organizer of IPAM workshop “Gauge Theory and Categorification,” March 6-10, 2017.

Co-organizer of UT Austin conference “Between Topology and Quantum Field Theory,” January 14-18, 2019.

Co-organizer of MSRI semester program “Holomorphic Differentials in Mathematics and Physics,” August 12-December 13, 2019, and of workshops “Introductory Workshop: Holomorphic Differentials in Mathematics and Physics,” August 19-23, 2019, and “Holomorphic Differentials in Mathematics and Physics,” November 18-22, 2019.

Co-organizer of Yale conference “On the Crossroads of Algebra, Geometry and Physics,” May 16-20, 2022.

Co-organizer of Simons Center program “Geometric, Algebraic, and Physical structures around the moduli of Meromorphic Quadratic Differentials,” May 13-June 21, 2024.

Co-organizer of online Western Hemisphere Colloquium in Geometry and Physics, 2020-2024.

Co-organizer of Institut Henri Poincaré workshop “Higher rank geometric structures, Higgs bundles and physics,” May 19-27, 2025.

Students supervised

PhD students graduated:

- **Danny Nackan** (math, Yale, 2025)
- **Qianyu Hao** (physics, UT Austin, 2022)
- **Sebastian Schulz** (math, UT Austin, 2022)
- **Ali Shehper** (physics, UT Austin, 2022, co-supervised with Jacques Distler)
- **Ivan Tulli** (math, UT Austin, 2020)
- **Richard Hughes** (math, UT Austin, 2018, co-supervised with David Ben-Zvi)
- **Fei Yan** (physics, UT Austin, 2018, co-supervised with Jacques Distler)
- **Aaron Fenyes** (math, UT Austin, 2016)
- **Laura Fredrickson** (math, UT Austin, 2016)
- **Cesar Garza** (math, UT Austin, 2015)
- **Tom Mainiero** (physics, UT Austin, 2015, co-supervised with Jacques Distler)

PhD students in candidacy: **Sam Panitch** (math, Yale)

Teaching

At Yale:

- 2025 MATH 255 **Analysis 1.**
- 2024 MATH 302 **Vector Analysis and Integration on Manifolds.**
- 2023 MATH 255 **Analysis 1.**
- 2022 MATH 302 **Vector Analysis and Integration on Manifolds.**
MATH 706 **Geometry of Stokes Phenomena.**
- 2021 MATH 302 **Vector Analysis and Integration on Manifolds.**
MATH 435 **Differential Geometry.**
- 2020 MATH 250 **Vector Analysis.**
MATH 225 **Linear Algebra and Matrix Theory.**

At University of Texas at Austin:

- 2019 M 361 **Theory of Functions of a Complex Variable.**
- 2018 M 408C **Differential and Integral Calculus.**
- 2017 M 392C **Applications of Quantum Field Theory to Geometry.**
M 408L **Integral Calculus (x2).**
- 2016 M 392C **Moduli of Higgs Bundles.**
- 2015 M 408C **Differential and Integral Calculus (x2).**
M 382D **Differential Topology.**
- 2014 M 408M **Multivariable Calculus.**
M 392C **Complex Geometry.**
- 2013 M 365C **Real Analysis.**
M 392C **Riemannian Geometry.**
- 2012 M 408L **Integral Calculus.**
M 392C **Applications of Quantum Field Theory to Geometry.**
- 2011 M 361K **Introduction to Real Analysis.**
M 392C **Complex Geometry.**
- 2010 M 340L **Matrices and Matrix Calculations.**
M 408L **Integral Calculus.**