NITIN KUMAR CHIDAMBARAM
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POSITIONS

• UNIVERSITY OF EDINBURGH OCT 2022 - PRESENT
Postdoctoral Research Associate

• MAX-PLANCK-INSTITUT FÜR MATHEMATIK, BONN AUG 2020 - SEP 2022
Postdoctoral Fellow

EDUCATION

• PHD. IN MATHEMATICS, UNIVERSITY OF ALBERTA SEP 2015 - JUL 2020
Thesis: Aspects of enumerative and categorical algebraic geometry
Advisors: Vincent Bouchard, David Favero.

• BTECH. ENGINEERING PHYSICS, INDIAN INSTITUTE OF TECHNOLOGY MADRAS 2011 - 2015
Dissertation: Moduli space of string compactifications on K3 surfaces
Advisor: Prasanta K. Tripathy.

RESEARCH INTERESTS

My interests lie in the intersection of algebraic geometry and physical mathematics (in particular, ideas from mirror symmetry and string theory). I am currently working on the following:

- Eynard-Orantin topological recursion, W-algebra representations, Cohomological field theories, Hurwitz theory, Integrability
- Derived categories in algebraic geometry, Bondal-Orlov conjecture

PREPRINTS

1. Bouchard, Chidambaram, Giacchetto, Shadrin 'Theta classes: generalized topological recursion, integrability and $\mathcal{W}$-constraints', arXiv:2505.11291 [math.AG]
2. Chidambaram, Dołęga, Osuga '$\mathfrak{b}$-Hurwitz numbers from refined topological recursion', arXiv:2412.17502 [math.CO] (submitted)
3. Borot, Chidambaram, Umer 'Whittaker vectors at finite energy scale, topological recursion and Hurwitz numbers', arXiv:2403.16938 [math-ph] (submitted)
4. Chidambaram, Dołęga, Osuga 'b-Hurwitz numbers from Whittaker vectors for $\mathcal{W}$-algebras', arXiv:2401.12814 [math.AG] (submitted)

PUBLICATIONS

1. Borot, Bouchard, Chidambaram, Kramer, Shadrin 'Taking limits in topological recursion', arXiv:2309.01654 [math.AG] (accepted in *J. Lond. Math. Soc.*)
2. Chidambaram, Garcia-Failde, Giacchetto 'Relations on $\overline{\mathcal{M}}_{g,n}$ and the negative r-spin Witten conjecture', *Invent. Math. 241, 929–997 (2025)*
3. Charbonnier, Chidambaram, Garcia-Failde, Giacchetto 'Shifted Witten classes and topological recursion', *Trans. Amer. Math. Soc. 377.2 (2024)*.
4. Borot, Bouchard, Chidambaram, Creutzig, 'Whittaker vectors for $\mathcal{W}$-algebras from topological recursion', *Sel. Math. New Ser. 30, 33 (2024)*.
5. Chidambaram, Favero, 'Windows for cdgas', *Adv. Math. 379 (2021), 107553*.
6. Ballard, Chidambaram, Favero, McFaddin, Vandermolen, 'Kernels for Grassmann Flops', *J. Math. Pures Appl. (9) 147 (2021), 29–59*.
7. Borot, Bouchard, Chidambaram, Creutzig, Noshchenko, 'Higher Airy structures, W algebras and topological recursion', *Mem. Amer. Math. Soc. 296 (2024), no. 1476*.
8. Bouchard, Chidambaram, Dauphinee, 'Quantizing Weierstrass', *Commun. Number Theory Phys. 12 (2018), no. 2, 253–303*.
9. Kleinschmidt, Nicolai, & Chidambaram, (2015), 'Canonical Structure of the E_{10} Model and Supersymmetry', *Phys. Rev. D 91, 085039*.

GRANTS AND AWARDS

- 2020 Alberta Graduate Excellence Scholarship
- 2019 Josephine Mitchell Prize 2019
- 2019 University of Alberta Graduate Fellowship
- 2019 PIMS Graduate Student Prize, University of Alberta
- 2018 Josephine Mitchell Scholarship, University of Alberta
- 2017 Eoin L. Whitney Scholarship, University of Alberta
- 2016 Josephine Mitchell Scholarship, University of Alberta
- 2014 DAAD Fellowship for undergraduate research in Germany
- 2009 KVPY[1] fellowship

TEACHING

- SMSTC COURSE: HOMOLOGICAL ALGEBRA 2024
- MATH 100: CALCULUS I 2020
- MATH 102: LINEAR ALGEBRA 2019
- MATH 101: SINGLE VARIABLE CALCULUS 2017
- MATH 209: MULTI VARIABLE CALCULUS 2016

Teaching Assistant (led discussion sections, gave lectures and graded assignments and exams)

- TEACHING ASSISTANT IN THE DECIMA ROBINSON SUPPORT CENTER 2016-2020

Helped undergraduate students one-on-one with their questions

[1] Kishore Vygyanik Protsahan Yojana is a Govt of India fellowship for basic science research

SUPERVISION

- Georgian Sarghi, Masters in Mathematics, University of Bonn. May 2021 - June 2022

ORGANIZATION

- Algebra seminar, University of Edinburgh, 2023-present
- “Derived, Birational, and Categorical Algebraic Geometry ", BIRS workshop in Banff, November 2021.
- “Derived, Birational, and Categorical Algebraic Geometry (Online) ", BIRS workshop, November 2020.
- “Derived Categories and (Non)commutative Algebraic Geometry ", CMS Winter special session (online), December 2020.

SELECTED TALKS

- “Theta classes: integrability, W-constraints and topological recursion”, Algebraic geometry and moduli seminar, ETH Zurich, August 2025.
- “Gaiotto state from topological recursion”, Mathematical Physics seminar, University of Nagoya, April 2025.
- “CohFTs from r-th roots and integrability”, Combinatorics and interactions, IMPAN Krakow, March 2025.
- “b-Hurwitz numbers from W-algebra representations”, New Aspects in Topological Recursion, Resurgence and Related Topics, RIMS, Kyoto, July 2024.
- “b-Hurwitz theory, topological recursion and W-algebras ", Geometry Seminar, ICMAT, Madrid, February 2024.
- “Gaiotto vectors from topological recursion", The Sheffield Geometry and Physics Seminar, University of Sheffield, April 2023.
- “On the BGW τ-function", Recent advances on Moduli Space of Curves, Les Diablerets, Switzerland, March 2023.
- “Negative over positive I: The CohFT", New Trends in Mathematical Physics and Geometry session, PRIMA congress, Vancouver, December 2022.
- “Stratified Mukai via VGIT", NSF Workshop on Matrix Factorizations and related topics, University of Notre Dame, November 2022.
- “r-th roots: better negative than positive", Algebra, Geometry and Physics seminar, HU Berlin and MPIM Bonn, November 2022.
- “An introduction to Airy structures and some applications", Algebra Seminar, University of Edinburgh, October 2022.
- Mini-course (4 hours) “An introduction to the moduli space of curves and its intersection theory", TRSalento 2022, Otranto, September 2022.
- “Negative over positive II: Integrability", Geometry and Mathematical Physics Seminar, USTC, Hefei, June 2022.
- “r-th roots: better negative than positive", Colloquium talk, Tata Institute of Fundamental Research, Mumbai, April 2022.
- “Shifted Witten classes and topological recursion", Séminaire de Géométrie Enumérative, Jussieu, November 2021.
- “Kernels for GIT wall crossings", Algebra Seminar, Western University, March 2021.
- “Grassmann flops and Semi-orthogonal decompositions", GLSMs conference (online), August 2020.
- “VGIT for cdgas", Canadian Western Algebraic Geometry conference, University of Saskatchewan, March 2020.
- “$\mathcal{W}$-constraints in enumerative geometry: Higher Airy structures", FRAGMENT seminar, Colorado State University, October 2019.
- “Kernels for singular wall-crossings via cdgas", Geometry and Algebra of Landau-Ginzburg Models, Fields Institute, September 2019.
- “An introduction to Derived Categories in Algebraic Geometry", Graduate Summer School on Homological Algebra of Mirror Symmetry, Fields Institute, July 2019.

- "W-constraints in enumerative geometry ", Alberta Number Theory Days, BIRS, Banff, May 2019.

Refereeing service

Reviewer for Communications in Mathematical Physics, Dutch Research Council (NWO), Forum of Math Sigma, Geometry & Topology, International Mathematics Research Notices, Inventiones Mathematicae, Journal of the European Mathematical Society, Journal of the London Mathematical Society, Transactions of the AMS, US-Israel Binational Science Foundation.