Claudiu Raicu

Curriculum Vitae (November 13, 2026)

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Employment

2025– Frank M. Freimann Collegiate Professor, Department of Mathematics, University of Notre Dame.

2021– Professor, Department of Mathematics, University of Notre Dame.

2017–21 Associate Professor, Department of Mathematics, University of Notre Dame.

2014–17 Assistant Professor, Department of Mathematics, University of Notre Dame.

Spring 13 Postdoctoral Scholar, Mathematical Sciences Research Institute, Berkeley.

2011–14 Instructor, Department of Mathematics, Princeton University.

Education

2007–11 University of California, Berkeley, Ph.D. Mathematics.
Advisor: David Eisenbud. Thesis: *Secant Varieties of Segre–Veronese Varieties.*

2003–07 University of Bucharest, B.S. Mathematics.

2005–07 Superior Normal School of Bucharest.

Honors and Awards

2026–31 Simons Foundation, Travel Support for Mathematicians.

2025 College of Science Research Award, University of Notre Dame.

2024 Lucian Bădescu Prize, Institute of Mathematics of the Romanian Academy.

2023–26 PI on NSF Award DMS - 2302341.
– *Research grant: "Homological Commutative Algebra and Symmetry".*

2019–23 PI on NSF Award DMS - 1901886.
– *Research grant: "Homological Explorations and Symmetry".*

2019 Gheorghe Ţiţeica Prize of the Romanian Academy.

2018–21 Co-PI on NSF Awards DMS - 1806221 and DMS - 1904501.
– *Conference grant: "Center for Mathematics, University of Notre Dame".*

2017 Co-PI on NSF Award DMS - 1702114.
– *Conference grant: "A view towards algebraic geometry".*

2016–19 PI on NSF Award DMS - 1600765.
– *Research grant: "Employing symmetry in commutative algebra".*

2016–19 Sloan Research Fellowship.

2013–16 PI on NSF Award DMS - 1458715 (previously 1303042).
– *Research grant: "Spaces of tensors and their syzygies via representation theory and combinatorics".*

2013 Huneke Endowed Postdoctoral Scholar, MSRI.

2012 "Excellence in Teaching" E–Council Teaching Award, Princeton University.
– *Awarded by the Undergraduate and Graduate Engineering Council.*

2011 Kenneth Ribet & Lisa Goldberg award in Algebra, U.C. Berkeley.
– *U.C. Berkeley Thesis award.*

2007–08 Simons Fellowship, University of California, Berkeley.

2006 Grand First Prize in the International Mathematics Competition for University Students.
– *international Putnam–like mathematical competition:* `http://www.imc-math.org.uk/`

2002–03 Two Silver Medals in the International Mathematical Olympiad.
– *international mathematical competition for high–school students:* `http://www.imo-official.org/`

Publications and Preprints

1. *Suciu's Conjecture on hyperplane arrangements*, with Marian Aprodu, Gavril Farkas, and Alexander I. Suciu, arXiv: 2610.06683.
2. *Lefschetz properties for monomial complete intersections*, with Annet Kyomuhangi, Emanuela Marangone, and Ethan Reed, arXiv: 2609.09534.
3. *Cohomology characters on the incidence correspondence*, with Annet Kyomuhangi, Emanuela Marangone, and Ethan Reed, arXiv: 2609.01371.
4. *Stable sheaf cohomology on flag varieties*, with Keller VandeBogert, Journal of the American Mathematical Society **39**, no. 4, 985–1026, 2026.
5. *Powers of binary forms and derived Hermite reciprocity*, with Steven V Sam, Jerzy Weyman, and Fuxiang Yang, arXiv: 2602.15175.
6. *Diagonal F-thresholds for determinants and Pfaffians*, with Barbara Betti, Francesco Romeo, and Jyoti Singh, arXiv: 2602.05761.
7. *The effective Chen ranks conjecture*, with Marian Aprodu, Gavril Farkas, and Alexander I. Suciu, arXiv: 2512.10160.
8. *Stable sheaf cohomology and Koszul–Ringel duality*, with Keller VandeBogert, arXiv: 2509.08923.
9. *Computing the cohomology of line bundles on the incidence correspondence and related invariants*, with Annet Kyomuhangi, Emanuela Marangone, and Ethan Reed, arXiv: 2503.17522.
10. *Cohomology on the incidence correspondence and related questions*, with Annet Kyomuhangi, Emanuela Marangone, and Ethan Reed, arXiv: 2411.13450.
11. *Reduced resonance schemes and Chen ranks*, with Marian Aprodu, Gavril Farkas, and Alexander I. Suciu, J. Reine Angew. Math. (Crelle's Journal), no. 814, 205–240, 2024.

12. *Higher resonance schemes and Koszul modules of simplicial complexes*, with Marian Aprodu, Gavril Farkas, Alessio Sammartano, and Alexander I. Suciu, Journal of Algebraic Combinatorics **59**, no. 4, 787–805, 2024.
13. *Some questions arising from the study of cohomology on flag varieties*, with Zhao Gao and Keller VandeBogert, Proceedings of Symposia in Pure Mathematics **110**:333–348. Open Problems in Algebraic Combinatorics, American Mathematical Society, Providence, Rhode Island, 2024.
14. *Cohomology of line bundles on the incidence correspondence*, with Zhao Gao, Transactions of the American Mathematical Society (Series B) **11**, 64–97, 2024.
15. *Koszul modules with vanishing resonance in algebraic geometry*, with Marian Aprodu, Gavril Farkas, Jerzy Weyman, Selecta Mathematica **30**, no. 2, Paper No. 24, 2024.
16. *Borel–Moore homology of determinantal varieties*, with András C. Lőrincz, Algebraic Geometry **10**, no. 5, 576–606, 2023.
17. *Determinants, Gröbner Bases and Cohomology*, with Winfried Bruns, Aldo Conca, Matteo Varbaro, Springer Monographs in Mathematics. Springer, Cham, 2022.
18. *Topological invariants of groups and Koszul modules*, with Marian Aprodu, Gavril Farkas, Ştefan Papadima and Jerzy Weyman, Duke Mathematical Journal **171**, no. 10, 2013–2046, 2022.
19. *Euler obstructions for the Lagrangian Grassmannian*, with Paul LeVan, Algebraic Combinatorics **5**, no. 2, 299–318, 2022.
20. *Local Euler obstructions for determinantal varieties*, with András C. Lőrincz, Topology and its Applications **313**, Paper No. 107984, 2022 (special issue: proceedings of the conference *Hyperplane Arrangements and Singularities, 2019*).
21. *On some modules supported in the Chow variety*, with Steven V Sam and Jerzy Weyman, Vietnam Journal of Mathematics **50**, no. 2, 501–521, 2022 (special issue in honor of Bernd Sturmfels).
22. *An equivariant Hochster's formula for $\mathfrak{S}_n$-invariant monomial ideals*, with Satoshi Murai, Journal of the London Mathematical Society **105**, no. 3, 1974–2010, 2022.
23. *Bi-graded Koszul modules, K3 carpets, and Green's conjecture*, with Steven V Sam, Compositio Mathematica, Volume **158**, no. 1:33–56, 2022.
24. *Feasibility criteria for high-multiplicity partitioning problems*, Journal of Pure and Applied Algebra **226**, no. 6, Paper No. 106937, 2022.
25. *Hermite reciprocity and Schwarzenberger bundles*, with Steven V Sam, Commutative algebra 689–721, Expository papers dedicated to David Eisenbud on the occasion of his 75th birthday, edited by Irena Peeva. Springer, Cham, 2021.
26. *Koszul modules*, Recent developments in commutative algebra, edited by Aldo Conca, Srikanth B. Iyengar and Anurag K. Singh. Lecture Notes in Mathematics **2283**: 33–57, 2021.
27. *Hodge ideals for the determinant hypersurface*, with Michael Perlman, Selecta Math. (N.S.) **27**, no. 1, Paper No. 1, 2021.
28. *Relations between the 2×2 minors of a generic matrix*, with Hang Huang, Michael Perlman, Claudia Polini, and Alessio Sammartano, Adv. Math. **386**, Paper No. 107807, 2021.

29. *Regularity of $\mathfrak{S}_n$-invariant monomial ideals*, J. Combin. Theory Ser. A **177**, Paper No. 105307, 2021.
30. *Iterated local cohomology groups and Lyubeznik numbers for determinantal rings*, with András C. Lőrincz, Algebra & Number Theory **14**, no. 9:2533–2569, 2020.
31. *Koszul modules and Green's conjecture*, with Marian Aprodu, Gavril Farkas, Ştefan Papadima and Jerzy Weyman, Invent. Math. **218**, Issue 3, 657–720, 2019.
32. *Computing Schur complexes*, with Michael K. Brown, Hang Huang, Robert P. Laudone, Michael Perlman, Steven V Sam, and João Pedro Santos, J. Softw. Algebra Geom. **9**, no. 2, 111–119, 2019.
33. *On the (non-)vanishing of syzygies of Segre embeddings*, with Luke Oeding and Steven V Sam, Algebraic Geometry **6** (5), 571–591, 2019.
34. *Equivariant $\mathcal{D}$-modules on binary cubic forms*, with András C. Lőrincz and Jerzy Weyman, Comm. Algebra **47**, no. 6, 2457–2487, 2019 (special issue in honor of Gennady Lyubeznik).
35. *Syzygies of determinantal thickenings and representations of the general linear Lie superalgebra*, with Jerzy Weyman, Acta Math. Vietnam. **44**, no. 1, 269–284, 2019 (special issue: proceedings of the conference *The Prospects for Commutative Algebra*).
36. *Regularity and cohomology of determinantal thickenings*, Proceedings of the London Mathematical Society **116**, no. 2:248–280, 2018.
37. *Homological invariants of determinantal thickenings*, Bull. Math. Soc. Sci. Math. Roumanie, Volume **60** (108), no. 4:425–446, 2017 (special issue in honor of Dorin Popescu).
38. *Bernstein–Sato polynomials for maximal minors and sub–maximal Pfaffians*, with András C. Lőrincz, Uli Walther, and Jerzy Weyman, Advances in Mathematics **307**:224–252, 2017.
39. *The syzygies of some thickenings of determinantal varieties*, with Jerzy Weyman, Proceedings of the American Mathematical Society **145**:49–59, 2017.
40. *Characters of equivariant $\mathcal{D}$-modules on Veronese cones*, Transactions of the American Mathematical Society **369**, no. 3:2087–2108, 2017.
41. *Local cohomology with support in ideals of symmetric minors and Pfaffians*, with Jerzy Weyman, Journal of the London Mathematical Society, Volume **94**, Issue 3:709–725, 2016.
42. *Characters of equivariant $\mathcal{D}$-modules on spaces of matrices*, Compositio Mathematica, Volume **152**, Issue 9:1935–1965, 2016.
43. *Representation stability for syzygies of line bundles on Segre–Veronese varieties*, Journal of the European Mathematical Society **18**, no. 6:1201–1231, 2016.
44. *Introduction to uniformity in commutative algebra*, with Craig Huneke, Mathematical Sciences Research Institute Publications, **67**:163–190, Commutative Algebra and Noncommutative Algebraic Geometry, Cambridge Univ. Press, Cambridge, 2015.
45. *Non-simplicial decompositions of Betti diagrams of complete intersections*, with Courtney Gibbons, Jack Jeffries, Sarah Mayes, Branden Stone, and Bryan White, Journal of Commutative Algebra **7**, no. 2:189–206, 2015.

46. *Local cohomology with support in generic determinantal ideals*, with Jerzy Weyman, Algebra & Number Theory **8**, no. 5:1231–1257, 2014.
47. *Local cohomology with support in ideals of maximal minors and sub–maximal Pfaffians*, with Jerzy Weyman and Emily Witt, Advances in Mathematics **250**:596–610, 2014.
48. *Products of Young symmetrizers and ideals in the generic tensor algebra*, Journal of Algebraic Combinatorics **39**, no. 2, 247–270, 2014.
49. *Tangential varieties of Segre–Veronese varieties*, with Luke Oeding, Collectanea Mathematica **65**, no. 3:303–330, 2014.
50. 3×3 *Minors of Catalecticants*, Mathematical Research Letters **20**, no. 4:745–756, 2013.
51. *Secant varieties of Segre–Veronese varieties*, Algebra & Number Theory **6**, no. 8:1817–1868, 2012.
52. *Affine toric equivalence relations are effective*, Proceedings of the American Mathematical Society **138**:3835–3847, 2010.
53. Appendix to J. Kollár, *Quotients by finite equivalence relations*, Mathematical Sciences Research Institute Publications, **59**:227–256, Current developments in algebraic geometry, Cambridge Univ. Press, Cambridge, 2012.

Teaching Experience

2021– Professor, University of Notre Dame. *Basic Algebra I (Groups, Rings & Modules); Basic Algebra II (Fields and Galois theory, homological and commutative algebra); Introduction to Algebraic Geometry; Introduction to Linear Algebra and Differential Equations; Graduate Topics in Algebra.*

2017–21 Associate Professor, University of Notre Dame. *Basic Algebra II (Fields and Galois theory, homological and commutative algebra); Introduction to Linear Algebra and Differential Equations; Honors Algebra III (Group Theory); Honors Algebra IV (Rings, Fields, and Galois Theory); Multivariable Calculus; Introduction to Algebraic Geometry; Homological Commutative Algebra and Symmetry.*

2014–17 Assistant Professor, University of Notre Dame. *Introduction to Linear Algebra and Differential Equations; Calculus II; Introduction to Toric Varieties; Introduction to Algebraic Geometry.*

2011–14 Instructor, Princeton University. *Multivariable Calculus; Linear Algebra and Applications; Abstract Algebra; Junior Seminar on Coxeter Groups.*

2013 Instructor in the Marin Math Circle.

2009–11 Graduate Student Instructor, UC Berkeley. *Calculus in One Variable; Linear Algebra and Differential Equations.*

2008–11 Instructor in the Berkeley Math Circle.

2008 Teaching Assistant, UC Berkeley. *Elementary Algebraic Geometry; Groups, Rings and Fields.*

2004–07 Mathematics Olympiad Instructor, International Computer High School of Bucharest.

2004–07 Instructor in the Romanian training program for the International Mathematical Olympiad.

Postdoc Mentoring

2026–29 Teresa Yu, University of Notre Dame.

2021–25 Keller VandeBogert, University of Notre Dame.

2018–20 Alessio Sammartano, University of Notre Dame.

Graduate Advising

2025– Anika Homan, University of Notre Dame.

2023– Fuxiang Yang, University of Notre Dame.

2020–25 Ethan Reed, University of Notre Dame.

2020–25 Juan Lanfranco, University of Notre Dame.

2019–25 Jacob Zoromski, University of Notre Dame.

2018–24 Lizda Moncada, University of Notre Dame.

2019–23 Paul LeVan, University of Notre Dame.

2020–21 Deirdre Coulter, University of Notre Dame.

2017–22 Zhao Gao, University of Notre Dame.

2015–20 Michael Perlman, University of Notre Dame.



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