

NICOLA TARASCA

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DEPARTMENT OF MATHEMATICS & APPLIED MATHEMATICS

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RICHMOND, VA 23284-2014, USA

EDUCATION

- 2008–2012 Ph.D. in Mathematics, HUMBOLDT UNIVERSITY IN BERLIN and BERLIN MATHEMATICAL SCHOOL, Germany, supervised by Gavril Farkas. Ph.D. thesis: *Geometric cycles in moduli spaces of curves*. Honor: *Magna cum Laude*. Defended in April 2012.
- 2006–2008 *Master en Mathématiques Fondamentales*, PIERRE AND MARIE CURIE UNIVERSITY, Paris VI, France. Master thesis: *Seshadri constants of Abelian varieties*, supervised by Marc Hindry. Graduated with highest honor (*Très Bien*) in June 2008.
- 2003–2006 *Laurea Triennale* in Mathematics, UNIVERSITY OF TOR VERGATA IN ROME, Italy. Graduated with highest honor (110/110 *e Lode*) in July 2006.

POSITIONS

- Since 2019 Assistant Professor of Math., VIRGINIA COMMONWEALTH UNIVERSITY, USA.
- 2017–2019 Hill Assistant Professor, RUTGERS UNIVERSITY, USA.
- 01–07/2017 Postdoctoral Associate, UNIVERSITY OF GEORGIA, USA.
- 07–12/2016 Fields Postdoctoral Fellow, FIELDS INSTITUTE, Canada.
- 2013–2016 Research Assistant Professor, UNIVERSITY OF UTAH, USA.
- 2011–2013 Postdoctoral Fellow, LEIBNIZ UNIVERSITY HANNOVER, Germany.

RESEARCH INTERESTS

Geometry and combinatorics of curves and their moduli spaces, vector bundles and Brill–Noether theory, modern Schubert calculus, geometric realizations of vertex operator algebras and conformal blocks on moduli spaces.

PAPERS

17. A pointed Prym-Petri Theorem

TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY, *to appear*.

16. k -canonical divisors through Brill-Noether special points

with Iulia Gheorghita

ANNALI DELLA SCUOLA NORMALE SUPERIORE DI PISA, *to appear*.

15. Incidence varieties in the projectivized k -th Hodge bundle over curves with rational tails

with Iulia Gheorghita

Submitted, arXiv:2106.15637.

14. Motivic classes of degeneracy loci and pointed Brill-Noether varieties
with Dave Anderson *and* Linda Chen
JOURNAL OF THE LONDON MATHEMATICAL SOCIETY, 105:3 (2022), pp. 1787-1822.
13. Vertex algebras of CohFT-type
with Chiara Damiolini *and* Angela Gibney
FACETS OF ALGEBRAIC GEOMETRY: A COLLECTION IN HONOR OF WILLIAM FULTON'S 80TH BIRTHDAY, London Mathematical Society Lecture Note Series (2022), pp. 164–189. Cambridge University Press.
12. On factorization and vector bundles of conformal blocks from vertex algebras
with Chiara Damiolini *and* Angela Gibney
ANNALES SCIENTIFIQUES DE L'ÉCOLE NORMALE SUPÉRIEURE, *to appear*.
11. Conformal blocks from vertex algebras and their connections on $\overline{\mathcal{M}}_{g,n}$
with Chiara Damiolini *and* Angela Gibney
GEOMETRY & TOPOLOGY, 25:5 (2021), pp. 2235–2286.
10. K-classes of Brill-Noether loci and a determinantal formula
with Dave Anderson *and* Linda Chen
INTERNATIONAL MATHEMATICS RESEARCH NOTICES, 16 (2022), pp. 12653–12698.
9. Classes of Weierstrass points on genus 2 curves *with* Renzo Cavalieri
TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY, 372 (2019), pp. 2467–2492.
8. Du Val curves and the pointed Brill-Noether Theorem *with* Gavril Farkas
SELECTA MATHEMATICA, 23:3 (2017), pp. 2243–2259.
7. Extremality of loci of hyperelliptic curves with marked Weierstrass points
with Dawei Chen
ALGEBRA & NUMBER THEORY, 10:9 (2016), pp. 1935–1948.
6. Loci of curves with subcanonical points in low genus *with* Dawei Chen
MATHEMATISCHE ZEITSCHRIFT, 284:3 (2016), pp. 683–714.
5. Divisors of secant planes to curves
JOURNAL OF ALGEBRA, 454 (2016), pp. 1–13.
4. Pointed Castelnuovo numbers *with* Gavril Farkas
MATHEMATICAL RESEARCH LETTERS, 23:2 (2016), pp. 389–404.
3. Double total ramifications for curves of genus 2
INTERNATIONAL MATHEMATICS RESEARCH NOTICES, 19 (2015), pp. 9569–9593.

2. Brill–Noether loci in codimension two

COMPOSITIO MATHEMATICA, 149:09 (2013), pp. 1535–1568.

1. Double points of plane models in $\overline{\mathcal{M}}_{6,1}$

JOURNAL OF PURE AND APPLIED ALGEBRA, 216:4 (2012), pp. 766–774.

GRANTS, AWARDS, AND SCHOLARSHIPS

- 2022–27 *Simons Foundation: Collaboration Grants for Mathematicians Award*: \$42,000.
 2022–23 *VCU Quest Fund Award*: \$47,794.
 Co-PI with Marco Aldi and Allison Moore.
 2022–23 *VCU Breakthroughs Fund Award*: \$200,000.
 Co-PI with Marco Aldi, Christine Lee Bae, Allison Moore, and Rani Satyam.
 2022–23 *Seed Award*, VCU College of Humanities and Sciences: \$4,900.
 2018–19 *Academic Initiatives Program Award*, Math Dept. at Rutgers U: \$3,480.
 2016–19 *AMS-Simons Travel Grant*: \$4,000.
 2016 *Outstanding Postdoc Award*, Math Dept. at University of Utah.
 2012 *Oberwolfach Leibniz Grad Students Travel Grant*.
 2008–11 *Ph.D. Scholarship*, DFG Graduiertenkolleg 870 Berlin–Zürich and Berlin Mathematical School.
 2004–06 *Merit Scholarship* from the Science Department of University of Tor Vergata in Rome. Classified *first* in order of merit in 2006.

TALKS**Talks at conferences:**

- Mar 2020 *Moduli on Chestnut Hill*, Boston College, USA.
 Jun 2018 *Combinatorial Algebraic Geometry Retrospective Workshop*, Fields Institute, Canada.
 May 2018 *Ohio State Workshop on Schubert Calculus*, USA.
 Oct 2017 *Moduli of Curves in Gothenburg*, Sweden.
 Sep 2017 *AMS Session on Algebraic Curves and their Applications*, University of Central Florida, USA.
 Dec 2016 *Moduli and Birational Geometry*, Jeju island, South Korea.
 Dec 2016 *CMS Session on Combinatorial Algebraic Geometry*, Niagara Falls, Canada.
 Aug 2016 *Positivity of cycles*, AIM, San Jose, USA.
 May 2016 *Asymptotic invariants attached to linear series*, Pedagogical University in Cracow, Poland.
 Apr 2016 *AMS Session on Algebraic Geometry*, University of Utah, USA.
 Jan 2016 *JMM: AMS Session on Moduli Spaces in Algebraic Geometry*, Seattle, USA.
 Nov 2015 *AMS Session on Modern Schubert Calculus*, Rutgers University, USA.

- Jul 2015 *AMS Summer Institute in Algebraic Geometry*, University of Utah, USA.
 Jun 2015 *AMS–EMS–SPM International Meeting*, Porto, Portugal.
 Feb 2014 *Workshop on birational geometry and stability of moduli stacks and spaces of curves*, VIASM, Hanoi, Vietnam.
 Feb 2013 *Moduli Spaces in Algebraic Geometry*, Oberwolfach, Germany.
 Sep 2012 *Deutschen Mathematiker–Vereinigung: Jahrestagung*, Saarbrücken, Germany.
 May 2012 *Giornate di Geometria Algebraica e Argomenti Correlati*, Pisa, Italy.
 Nov 2011 *North German Algebraic Geometry Seminar*, Hannover, Germany.
 Jun 2010 *Géométrie Algébrique en Liberté XVIII*, Coimbra, Portugal.

Colloquium talks:

- Nov 2018 Math Department, Virginia Commonwealth University, USA.
 Sep 2018 Instituto de Matemáticas, Universidad Nacional Autónoma de México, Mexico.
 Mar 2017 School of Mathematics and Statistic, University College Dublin, Ireland.

Talks at seminars:

USA: University of California, San Diego (Dec 2021, Jun 2014), Virginia Commonwealth University (Dec 2021, Feb 2020, Oct 2019), IAS (Apr 2021), Virginia Tech (Nov 2020), University of Maryland (Oct 2020), Colorado State University (Mar 2019, Apr 2017, May 2014), IAS/Princeton University (Feb 2019), Rutgers University (Feb 2019, Sep 2018, Sep 2017), Central Michigan University (Oct 2018), The Ohio State University (Feb 2018), University of Pennsylvania (Oct 2017), University of Georgia (Feb 2017), New York University (Nov 2016), University of Illinois at Chicago (Oct 2015), Northeastern University (Oct 2015), University of South Carolina (Sep 2015), University of Utah (Jan 2015, Sep 2013), University of California, Berkeley (Apr 2014), Boston College (Mar 2014).

ITALY: University of Pisa (Jun 2022), University of Rome 3 (Jun 2022, Oct 2011).

GERMANY: Humboldt University in Berlin (Jun 2022, Nov 2020, Jun 2015, Feb 2011), Leibniz University Hannover (Jun 2013), Freie University in Berlin (Jan 2012).

MEXICO: Seminario Nacional de Geometría Algebraica en Línea (May 2022).

SWITZERLAND: ETH Zürich (Oct 2020; Dec 2019; May 2017).

CANADA: Fields Institute (Sep 2016).

TEACHING

At Virginia Commonwealth University. Lecturer for:

Advanced Calculus
(2 sections in springs 2022, 2021)

Bridge to Modern Analysis
(falls 2022, 2021, 2020)

Mathematical Structures
(2 sections in fall 2022; fall 2020)

General Topology
(fall 2021)

Intro to Mathematical Reasoning
(spring 2020)

Multivariate Calculus
(2 sections in fall 2019)

At Rutgers University. Lecturer for:

<i>Linear Algebra</i> (2 sections in spring 2019)	<i>Introductory Topology I</i> (fall 2018)
<i>Intro to Linear Algebra</i> (2 sections in spring 2018)	<i>Multivariate Calculus</i> (fall 2017)

At the University of Georgia. Lecturer for:

Calculus II for Science and Engineering (spring 2017)

At the University of Utah. Lecturer for:

<i>Engineering Calculus II</i> (spring 2016)	<i>Engineering Calculus I</i> (fall 2015)
<i>Calculus II</i> (spring 2015)	<i>Calculus I</i> (fall 2014)
<i>Introduction to Differential Equations</i> (spring 2014)	<i>Accelerated Engineering Calculus 2</i> (fall 2013)

At the Leibniz University Hannover. Teaching assistant for:

<i>Calculus 2 for Engineers</i> (springs 2013, 2012)	<i>Calculus 1 for Engineers</i> (winters 2013, 2012)
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At the Humboldt University in Berlin and the Berlin Mathematical School.

Algebraic Geometry I (teaching assistant, winter 2010)

Tutor of the Berlin Mathematical School Team for the *International Mathematics Competition* (spring 2009). Participation in the work of the Jury at the IMC 2009, Budapest, Hungary.

ADVISING

- ◇ Publication: *Embracing the Job Search*, NOTICES OF THE AMS, 66:10 (2019), PP. 1656–1657.
- ◇ Eric Evans, *Undergraduate Research Project*, VCU, fall 2022.
- ◇ Melissa Holly, *Directed Research*, VCU, spring 2022.
- ◇ Dylan Ryan, *Independent Studies*, VCU, 2020–2021.
- ◇ Mentor of three undergraduate students for the Math REU Program, Rutgers U, 2018.

SERVICE

- ◇ Co-organizer of the following research seminars:
 - the *Geometry Seminar* at Virginia Commonwealth University, since 2019;
 - the *Algebra Seminar* at Rutgers University, 2018–2019;
 - the *Algebraic Geometry Seminar* at the University of Utah, 2014–2016.
- ◇ Co-organizer of the following conferences:
 - *Richmond Geometry Festival*, 2022;
 - *Special Session at the AMS Meeting* at the University of Virginia, USA, 2022 (cancelled by AMS due to COVID-19);
 - *Richmond Geometry Festival*, 2021;

- *Special Session at the JMM*, 2021;
- *Special Session at the AMS Meeting* at the University of Virginia, USA, 2020 (rescheduled by AMS due to COVID-19);
- *Special Session at the AMS Meeting* at the University of Michigan, USA, 2018;
- *Georgia Summer Workshop in Algebraic Geometry*, University of Georgia, USA, 2016;
- *Géométrie Algébrique en Liberté (GAeL) XX* in Grenoble, France, 2012;
- *GAeL XIX* in Berlin, Germany, 2011.
- ◇ Selected faculty committees at VCU:
 - *Colloquium of the Math Department* (chair), 2022–2023, 2020–2021;
 - *Undergraduate Curriculum Committee* (chair), 2022–2023;
 - *College of Humanities and Sciences' Faculty Council*, 2020–2022.
- ◇ External reviewer and committee member for PhD defense, HU Berlin, 2020.
- ◇ Committee member for Ph.D. defense (University of Utah, 2019) and general examination (University of Utah, 2017).
- ◇ Panel member conveying the postdoctoral experience at the Career Panel of the *Algebraic Geometry Northeastern Series* at Rutgers University, 2018.
- ◇ Trainer at the *Teaching Assistants Training Workshop*, University of Utah, summer 2015.
- ◇ Student representative at the *Admissions Committee* and the *Committee on Mentoring, Gender, and Diversity*, Berlin Mathematical School, 2008–2009.
- ◇ Reviewer for the National Science Foundation, USA.
- ◇ Referee of more than 40 papers for the following 29 journals:
 ADVANCES IN GEOMETRY, ADVANCES IN MATHEMATICS, ALGEBRA & NUMBER THEORY, ALGEBRAIC COMBINATORICS, ANNALI DI MATEMATICA PURA ED APPLICATA, ANNALI SNS, ARCHIV DER MATHEMATIK, BULLETIN OF THE LMS, COMPOSITIO MATHEMATICA, CONTEMPORARY MATHEMATICS OF THE AMS, CRELLE, DOCUMENTA MATHEMATICA, EUROPEAN JOURNAL OF MATHEMATICS, INTERNATIONAL MATHEMATICS RESEARCH NOTICES, JOURNAL OF ALGEBRA, JOURNAL OF ALGEBRAIC GEOMETRY, JOURNAL OF PURE AND APPLIED ALGEBRA, JOURNAL OF THE LMS, JOURNAL OF THE RAMANUJAN MATH SOCIETY, MANUSCRIPTA MATHEMATICA, MATHEMATICAL PROCEEDINGS OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY, MATHEMATICS (MDPI), MATHEMATISCHE NACHRICHTEN, MATHEMATISCHE ZEITSCHRIFT, MICHIGAN MATHEMATICAL JOURNAL, PROCEEDINGS OF THE AMS, SELECTA MATHEMATICA, SIGMA, TRANSACTIONS OF THE AMS.

LANGUAGES

Italian as mother tongue. Fluent in English and French. Intermediate in German and Polish.